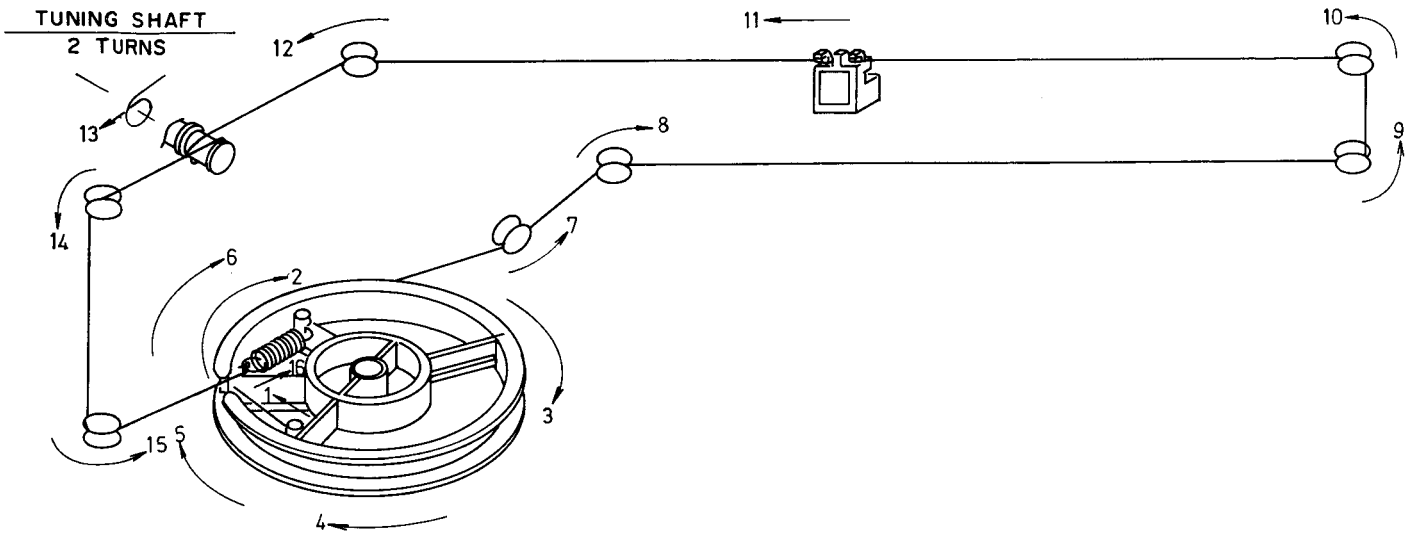
Serviceanweisung
Service manual

Ident-Nr. 3660800

MIDI 2260 CD

Seillaufplan

Dial cord stringing diagram



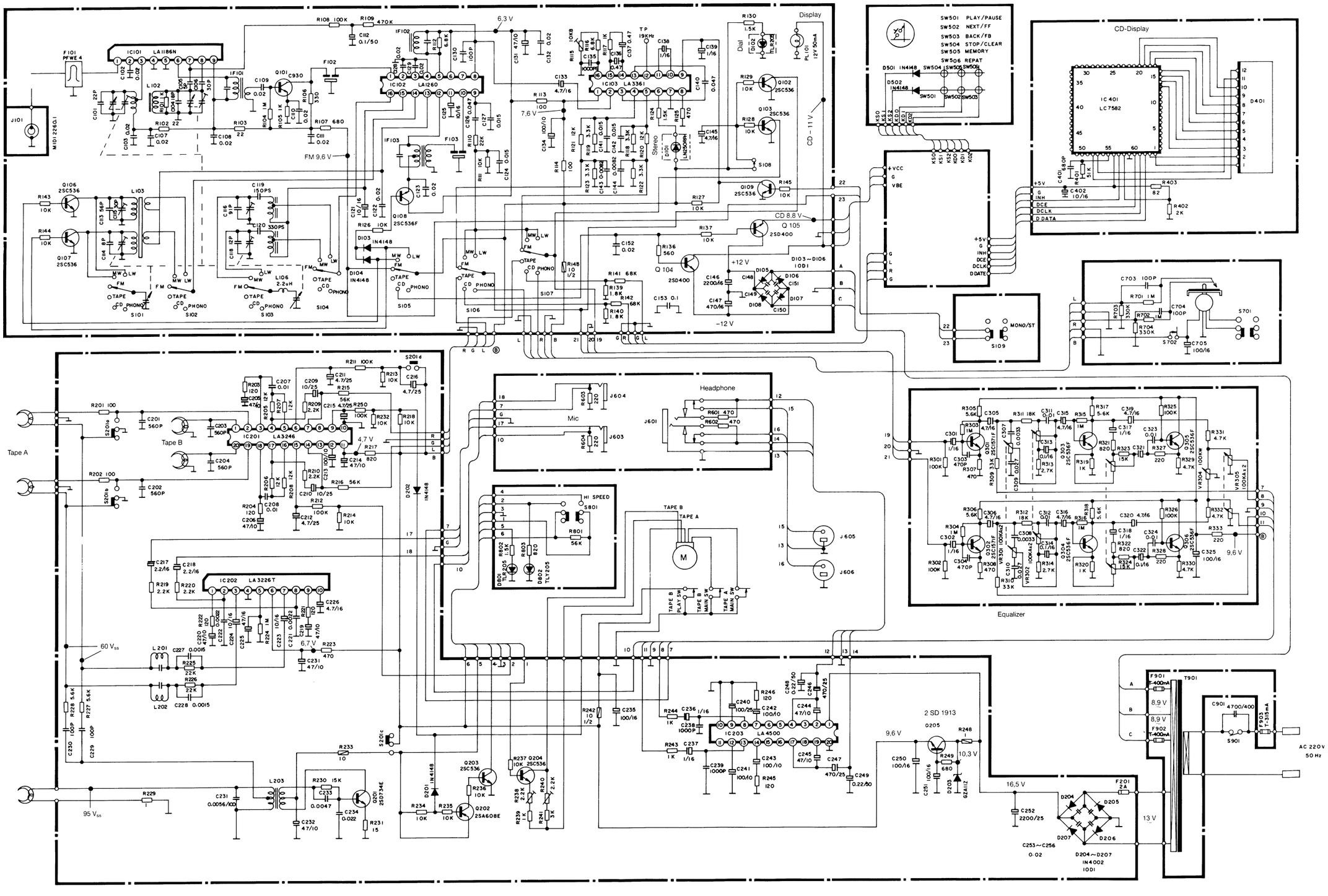
Spannungstabelle: Empfänger/Kassette

Voltage chart: receiver/tape

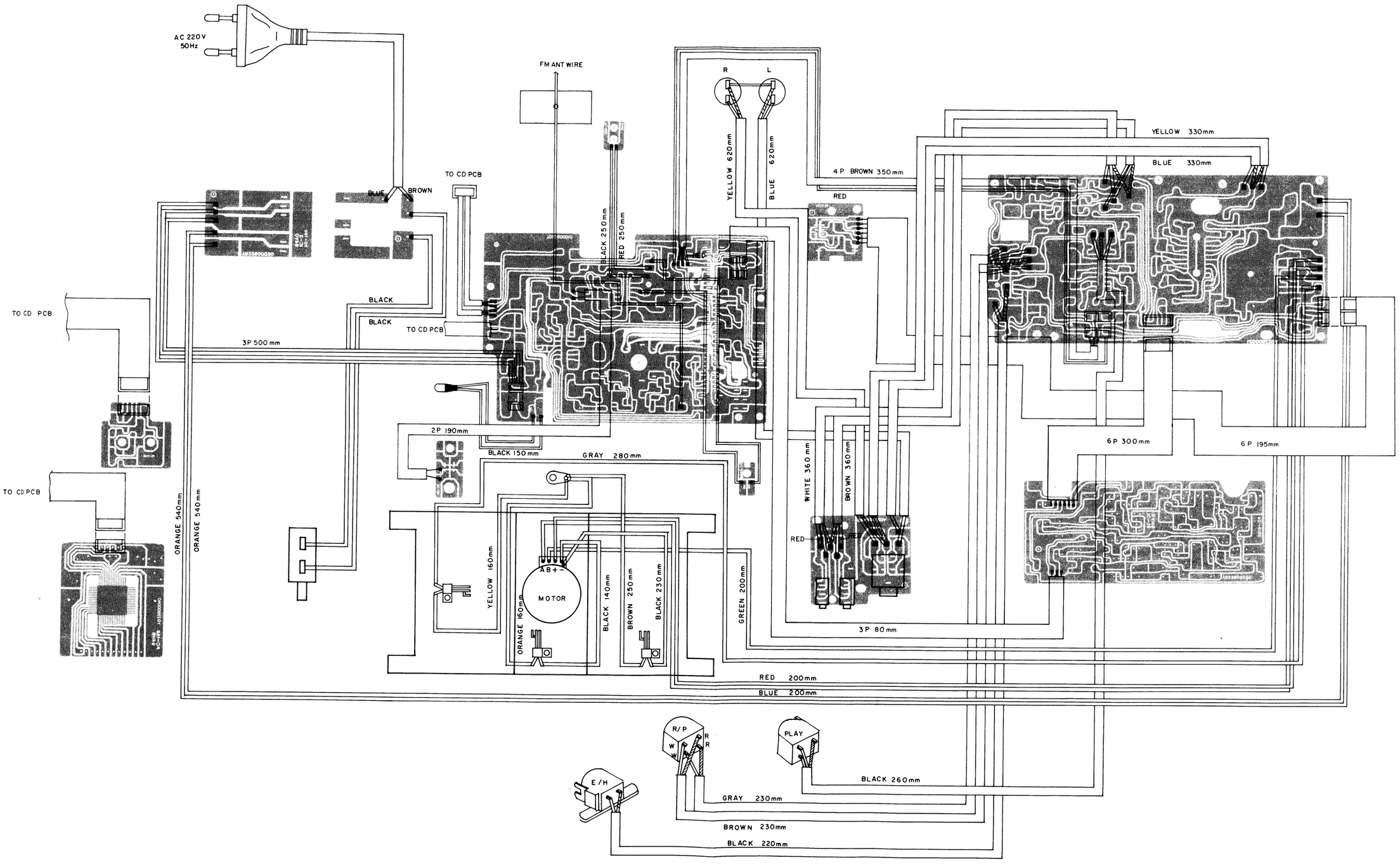
IC \ Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
IC 101 FM		1,7 V	4,6 V	GR	GR	4,7 V	1,9 V	4,0 V	4,7 V									
IC 102 FM	1,5 V	1,5 V	1,5 V	GR	7,0 V	6,3 V		1,3 V										
AM									1,5 V	1,0 V	0,9 V	7,2 V	1,3 V	1,3 V	2,4 V	2,3 V		
IC 103 FM Stereo	7,5 V	2,3 V	1,6 V	1,5 V	1,5 V	8,6 V	GR	0,3 V	0,0 V	1,3 V	1,3 V	1,0 V	1,3 V	1,3 V	1,3 V	0,8 V		
FM Mono									3,0 V			0,0 V						
IC 201 Mode: Play-Tape A			0,6 V	1,8 V	1,8 V				2,9 V	GR	4,7 V	4,6 V				1,8 V	1,8 V	0,6 V
IC 202 Mode: Play-Tape A	0,6 V		3,0 V	GR	0,5 V	6,7 V	3,0 V		0,6 V	6,3 V								

Schaltbild (ohne CD-Player)

Circuit diagram (without CD player)

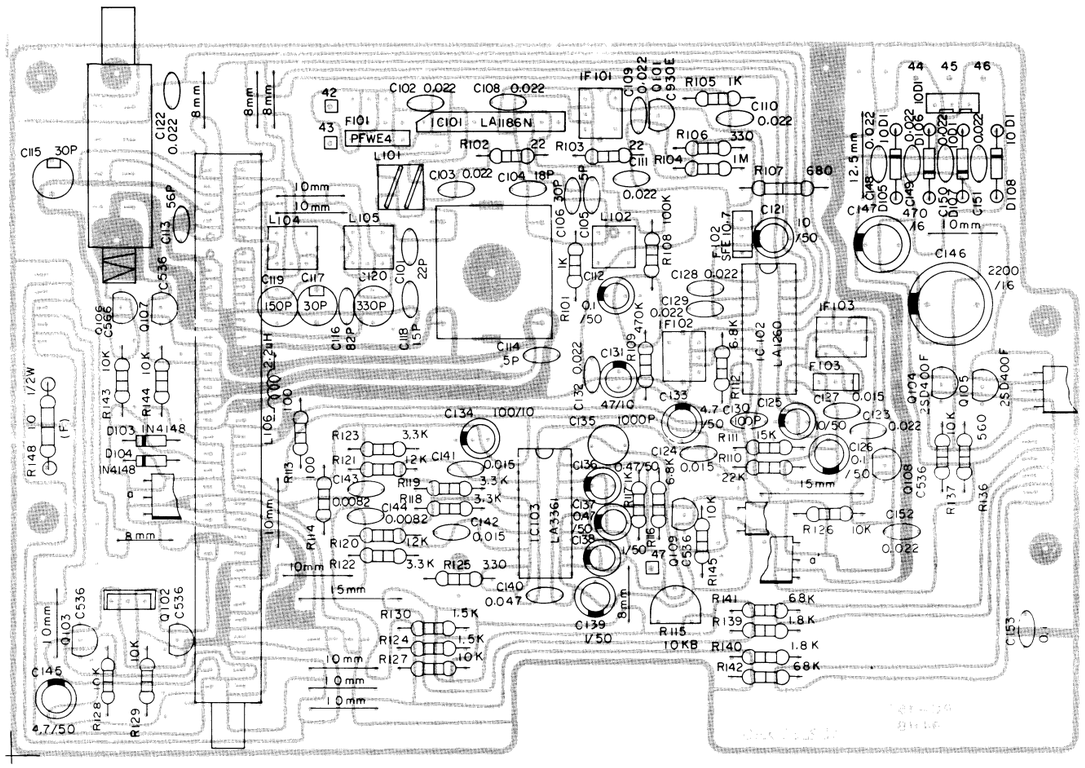


Verdrahtungsplan
Wiring diagram

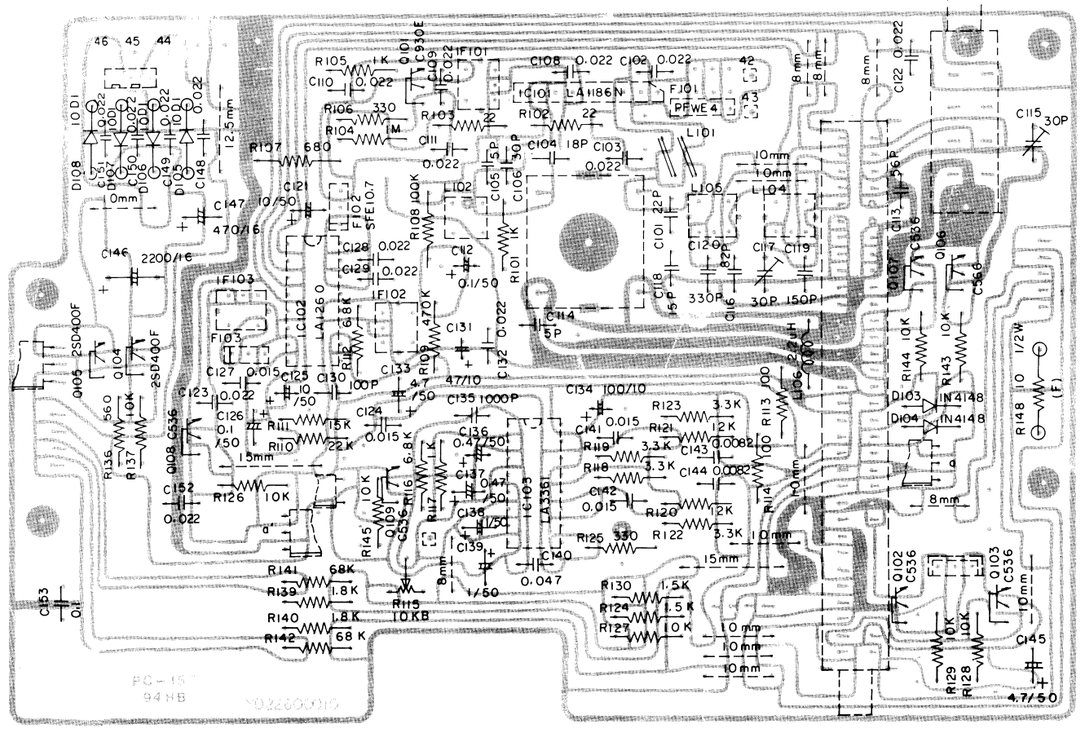


Tunerplatine
Tuner P.C.B.

Bestückungsseite
Top view

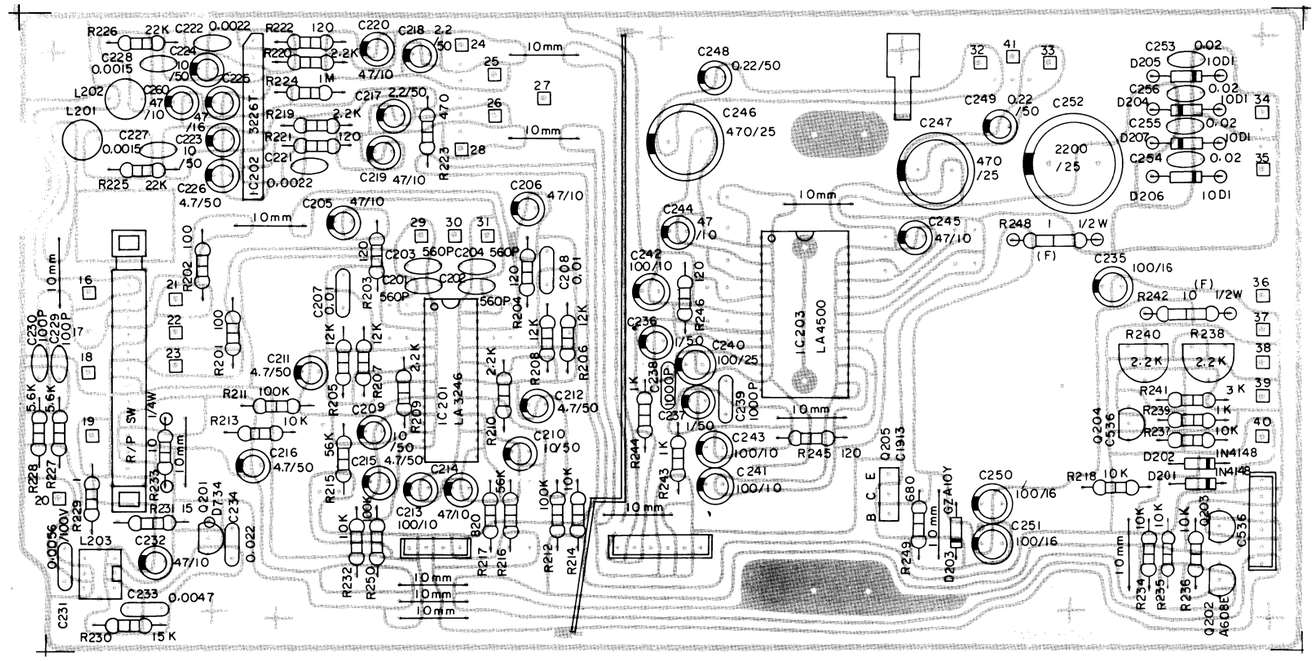


Leiterbahnseite
Bottom view

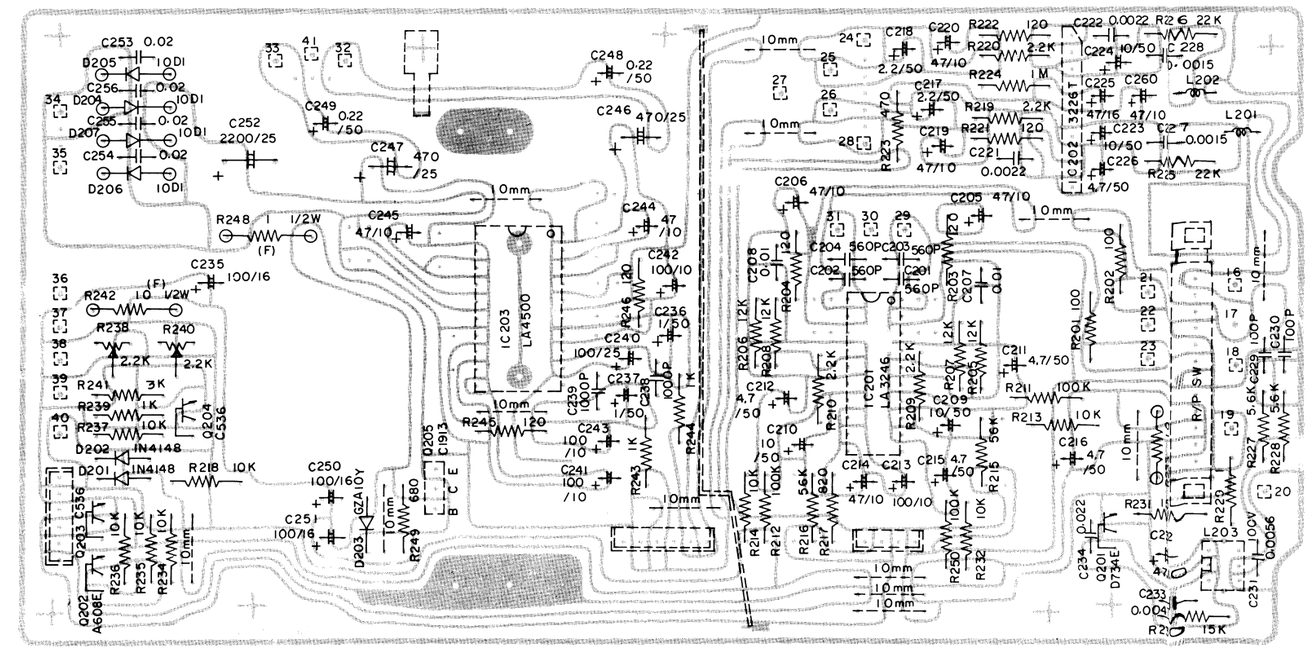


Cassetten-Audio-Platine
Cassette audio P.C.B.

Bestückungsseite
Top view

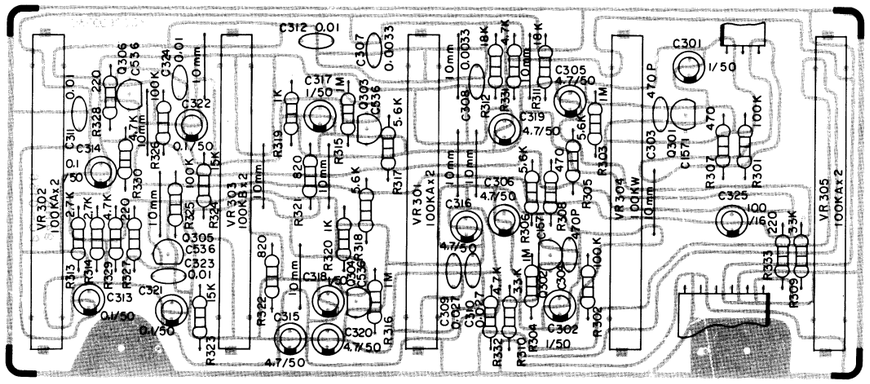


Leiterbahnseite
Bottom view

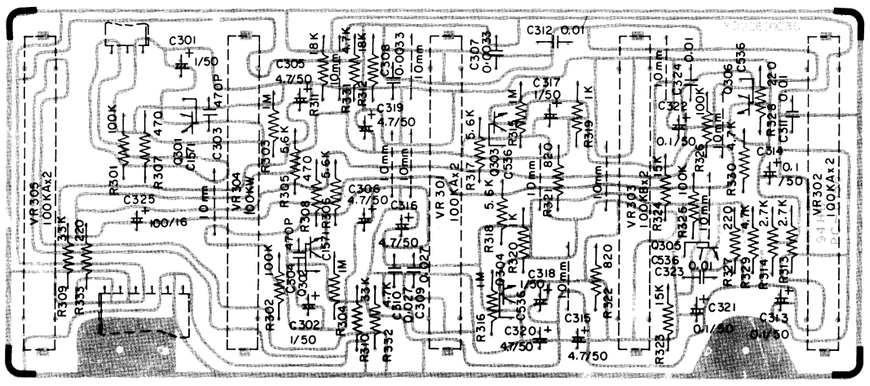


Equalizerplatine
Equalizer P.C.B.

Bestückungsseite
Top view

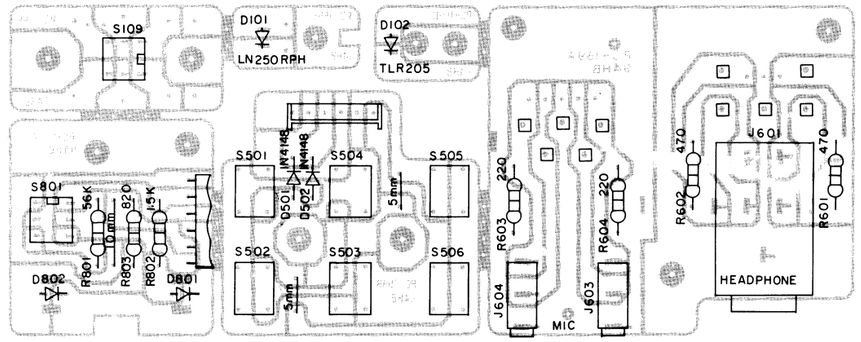


Leiterbahnseite
Bottom view



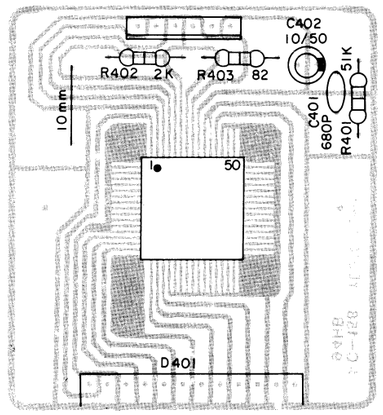
Buchsenplatine, CD-Bedienteil, Hi-Speed-Platine
Jackboard, CD-function, hi-speed

Bestückungsseite
Top view



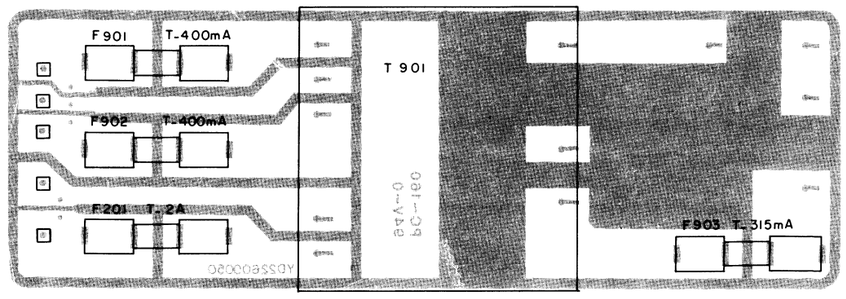
CD-Display-Platine
CD display P.C.B.

Bestückungsseite
Top view



Netztrafoplatine
Power transformer P.C.B.

Bestückungsseite
Top view

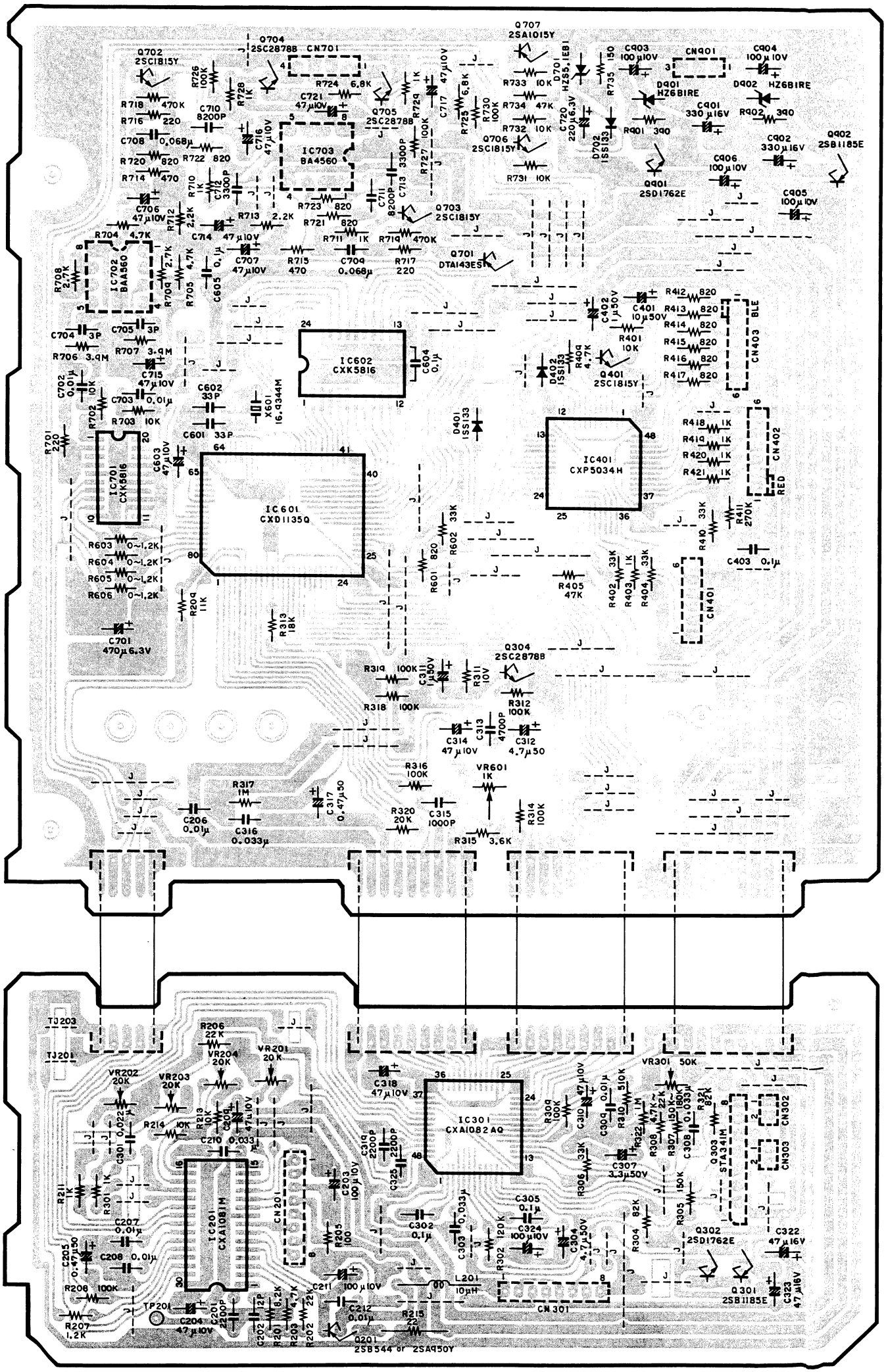


Platinendarstellung CD-Player

P.C.B. diagram CD player

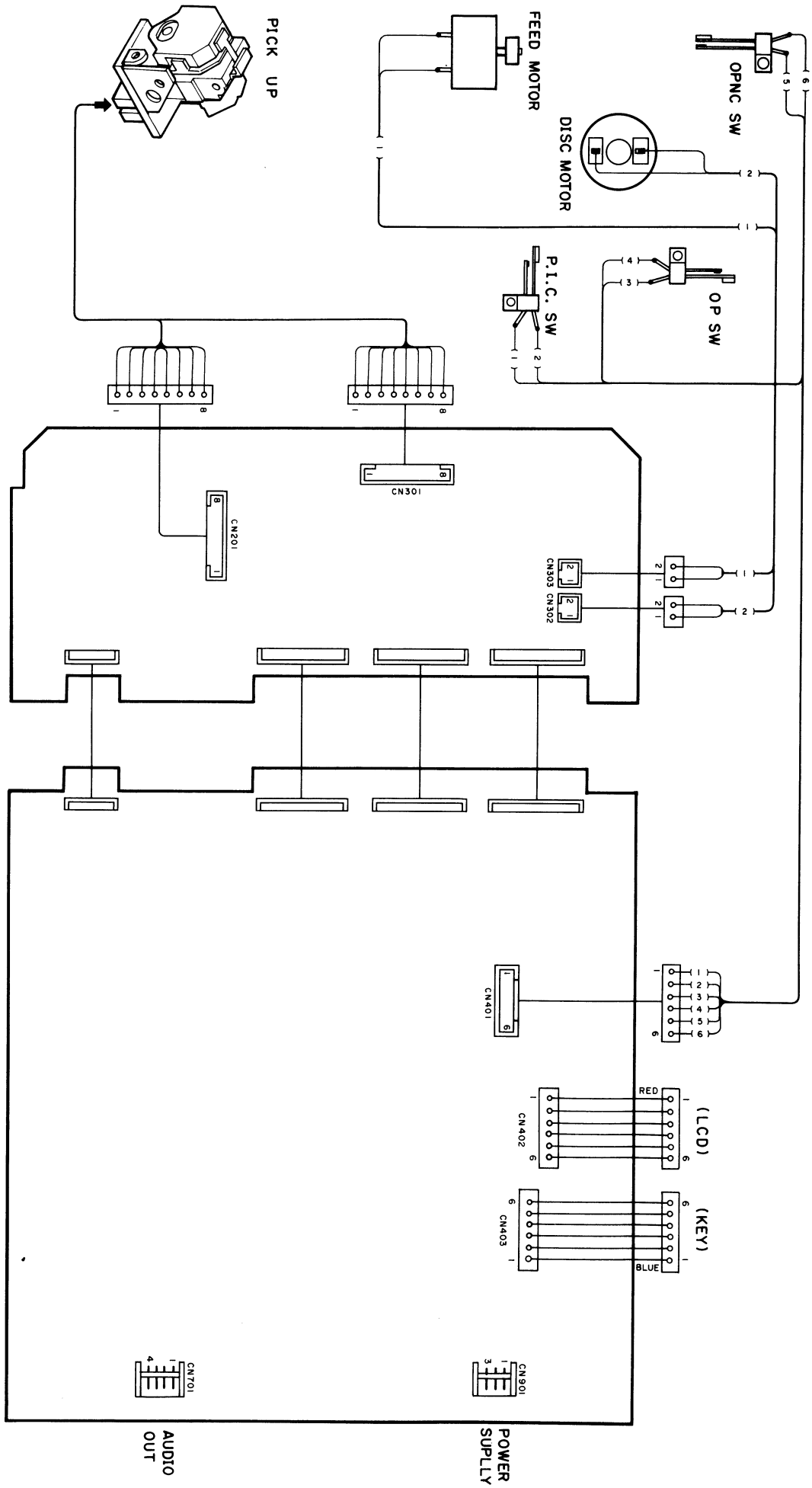
Leiterbahnseite

Bottom view



Verdrahtungsplan CD-Player

Wiring diagram CD player

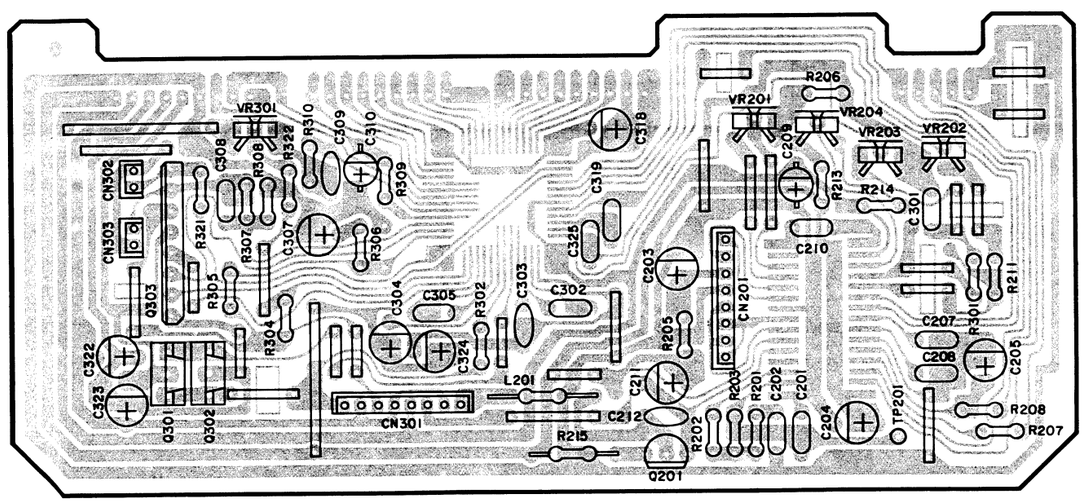


Platinendarstellung CD-Player

P.C.B. diagram CD player

Bestückungsseite

Top view



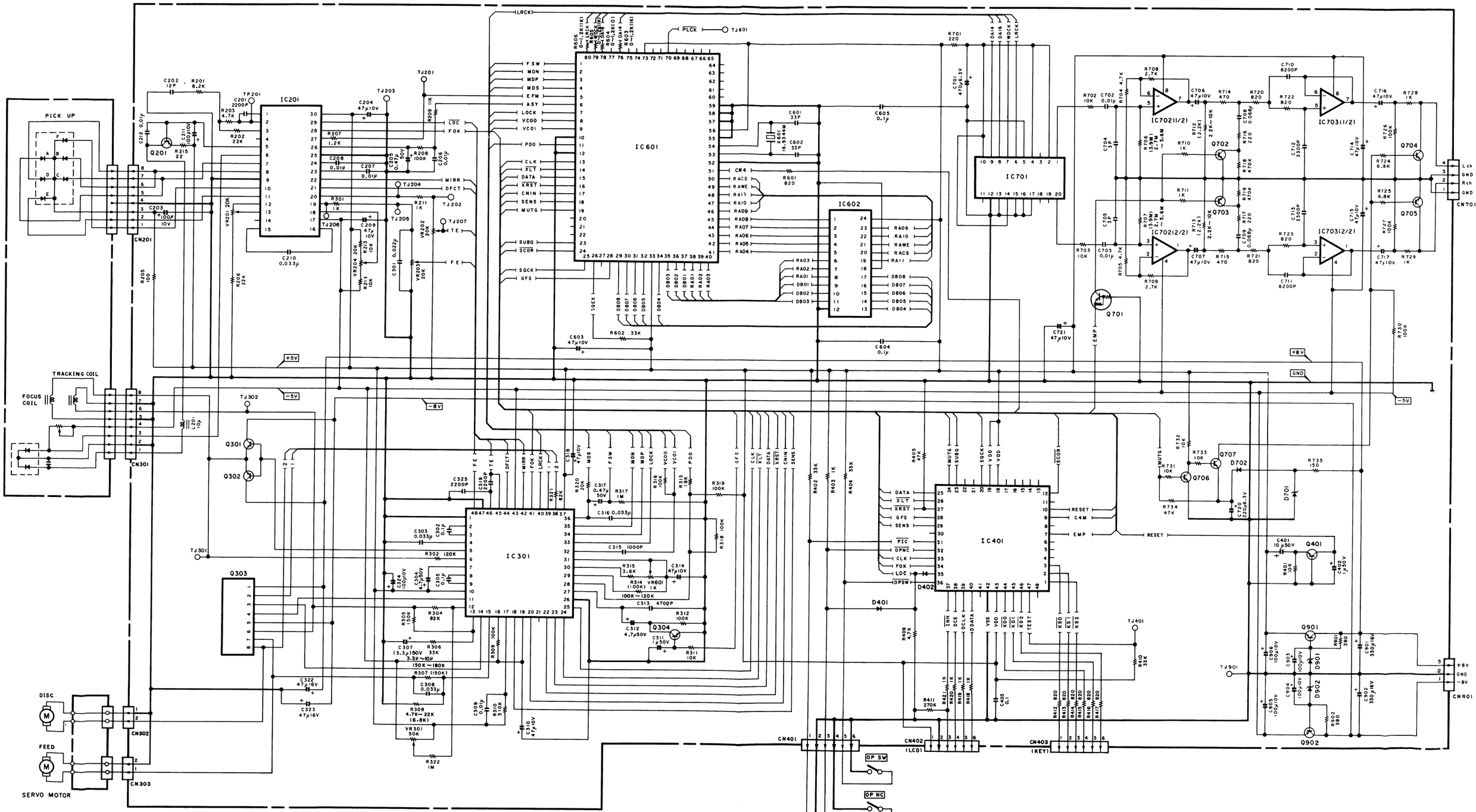
Ersatzteilliste CD-Player

Spare parts list CD player

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe
44 099 00	**CD Player kpl. CPMC-KG 001**	**CD player assy CPMC-KG 001**	A 27	G 2
44 100 00	Platine CD MTM 26HB groß	P.C.B. CD MTM 26HB large	59	
44 101 00	Platine CD MTM 26HB klein	P.C.B. CD MTM 26 HB small	59	
40 757 00	IC CXA 1081 M	IC CXA 1081 M	IC 201	B 3
40 758 00	IC CXA 1082 AQ	IC CXA 1082 AQ	IC 301	C 5
44 093 00	IC CXP 5034 H	IC CXP 5034 H	IC 401	
40 761 00	IC CXD 1135 Q	IC CXD 1135 Q	IC 601	D 4
44 094 00	IC CXK 5816	IC CXK 5816	IC 602	
44 095 00	IC LC 7880 M	IC LC 7880 M	IC 701	
40 765 00	IC BA 4560	IC BA 4560	IC 702, 703	A 6
44 096 00	Transistor 2 SB 544 F o. 2 SA 950Y	Transistor 2 SB 544 F o. 2 SA 950Y	Q 201	
40 766 00	Transistor 2 SB 1185 E	Transistor 2 SB 1185 E	Q 301, 902	A 8
40 767 00	Transistor 2 SD 1762 E	Transistor 2 SD 1762 E	Q 302, 901	A 7
40 768 00	Transistor STA 341 M	Transistor STA 341 M	Q 303	B 4
34 691 00	Transistor 2 SC 2878 B	Transistor 2 SC 2878 B	Q 304, 704, 705	A 3
26 134 06	Transistor 2 SC 1815 Y	Transistor 2 SC 1815 Y	Q 401, 702, 703, 706	A 2
40 368 00	Transistor DTA 143 ES	Transistor DTA 143 ES	Q 701	A 2
12 959 00	Transistor 2 SA 1015 Y	Transistor 2 SA 1015 Y	Q 707	A 6
24 750 00	Diode 1 SS 133-S	Diodes 1 SS 133-S	D 401, 402, 702	A 2
06 872 00	Zenerdiode 5,1 Volt	Zenerdiodes 5.1 Volt	D 701	A 1
06 040 00	Zenerdiode 5,6 Volt	Zenerdiodes 5.6 Volt	D 901, 902	A 2
44 097 00	Trimmpoti 20 kOhm	Trimming poti 20 kOhm	VR 201–204	
44 098 00	Trimmpoti 50 kOhm	Trimming poti 50 kOhm	VR 301	
29 623 00	Trimmpoti 1 kOhm	Trimming poti 1 kOhm	VR 601	A 3
37 031 00	Drossel LAP 10 µH	Inductor LAP 10 µH	L 201	A 2
40 769 00	Quarz 16,9344 MHz	Crystal 16.9344 MHz	X 601	B 2

Schaltbild CD-player

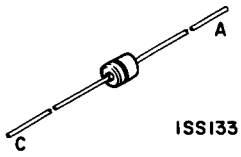
Circuit diagram CD player



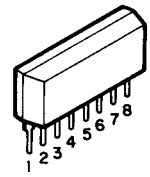
IC201	: CXA1081M	Q201	: 2SB544 or 2SA950Y	D401, 402, 702	: 1SS133
IC301	: CXA1082AQ	Q301	: 2SB1185E	D701	: HZS5.1EB1 or MTZJ5.1A
IC401	: CXP5034H	Q302	: 2SD1762E	D901, 902	: MZ6B1RE or MTZJ5.6B
IC601	: CXD1135Q	Q303	: STA341M		
IC602	: CXK5816	Q304, 704, 705	: 2SC2878B		
IC701	: LC7880M	Q401, 702, 703, 706	: 2SC1815Y		
IC702, 703	: BA4560	Q701	: DTA143ES		
		Q707	: 2SA1015Y		
		Q901	: 2SD1762E		
		Q902	: 2SB1185E		

IC-, Transistor-Spannungstabellen und -Blockschaltbilder CD-Player

IC, Transistor voltage chart and block diagrams CD-Player

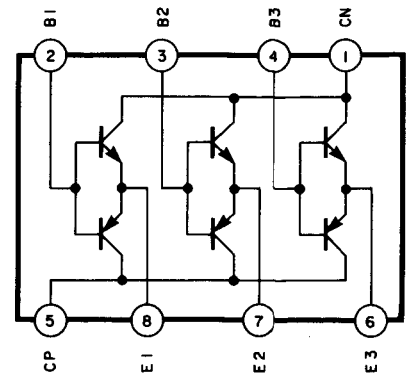


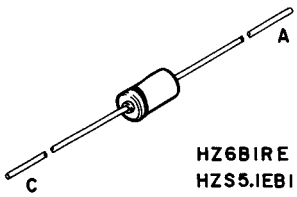
ISS133 D401,402,702



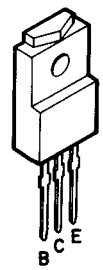
STA341M Q303

Q303 STA341M



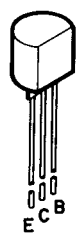


HZ6B1RE D401,402
HZS5.1EB1 D701



2SD1762 Q302,901
2SB1185 Q301,902

DTA134ES Q701



2SC2878 Q304,704,705
2SA1015 Q707
2SC1815 Q401,702,703,706

DC \ Pin No.	E	C	B
Q201	4.99	1.02	4.62
Q301	−0.04	−8.0	−0.60
Q302	−0.04	+8.03	−0.60
Q304	0	0	0.01
Q401	0	3.26	0
Q702	0	0	0
Q703	0	0	0
Q704	0	0	0.70

DC \ Pin No.	E	C	B
Q705	0	0	0.71
Q706	0	0.02	0.67
Q707	4.26	4.24	3.59
Q901	5.0	8.03	5.61
Q902	−5.02	−8.0	−5.63

DC \ Pin No.	IN	GND	OUT
Q701	0	0	0

Q303

Pin No.	1	2	3	4	5	6	7	8
DC	8.03	−0.49	0.63	−0.58	−8.01	−0.02	0.05	0

IC 201

Pin No.	1	2	3	4	5	6	7	8	9	10
DC	0	0.01	0	4.63	4.68	−5.0	0	0	0	0
Pin No.	11	12	13	14	15	16	17	18	19	20
DC	0	0	0	−0.03	−1.07	1.12	−5.0	0.04	0.02	0
Pin No.	21	22	23	24	25	26	27	28	29	30
DC	−4.39	0	−3.37	0	0	2.51	2.37	0.10	4.16	5.0

IC 301

Pin No.	1	2	3	4	5	6	7	8	9	10
DC	0	−0.01	0	−0.01	−0.60	0	0.65	0	0	5.0
Pin No.	11	12	13	14	15	16	17	18	19	20
DC	−0.58	0	0	0.62	0	−4.96	−4.08	0.10	−5.01	0.10
Pin No.	21	22	23	24	25	26	27	28	29	30
DC	NC	4.97	0	5.0	5.0	0	2.67	2.67	2.26	2.31
Pin No.	31	32	33	34	35	36	37	38	39	40
DC	3.53	2.34	0.01	0.01	0.01	0.01	5.0	−0.01	−0.49	2.50
Pin No.	41	42	43	44	45	46	47	48		
DC	0.10	0	−5.01	−4.39	0	0	0	0.01		

IC 401

Pin No.	1	2	3	4	5	6	7	8	9	10
DC	5.0	5.0	5.0	NC	NC	NC	0	NC	2.42	3.16
Pin No.	11	12	13	14	15	16	17	18	19	20
DC	NC	0	NC	NC	NC	NC	NC	5.0	5.0	5.0
Pin No.	21	22	23	24	25	26	27	28	29	30
DC	NC	NC	0	4.87	0	5.0	4.97	0	0.09	NC
Pin No.	31	32	33	34	35	36	37	38	39	40
DC	4.98	0	5.0	0.10	4.74	4.99	5.0	5.0	0	0
Pin No.	41	42	43	44	45	46	47	48		
DC	NC	0	5.0	5.0	5.0	5.0	5.0	5.0		

IC 601

Pin No.	1	2	3	4	5	6	7	8	9	10
DC	0	0	0	0	2.38	2.51	0	2.48	2.47	0
Pin No.	11	12	13	14	15	16	17	18	19	20
DC	2.52	0	4.99	4.99	0	4.96	0.09	0.09	4.87	NC
Pin No.	21	22	23	24	25	26	27	28	29	30
DC	NC	NC	0	0	4.99	4.98	NC	0	2.65	2.79
Pin No.	31	32	33	34	35	36	37	38	39	40
DC	2.41	1.96	5.0	2.05	0.80	4.28	2.37	2.49	2.49	2.49
Pin No.	41	42	43	44	45	46	47	48	49	50
DC	2.49	2.49	2.49	2.49	2.49	2.50	2.50	2.50	4.36	2.28
Pin No.	51	52	53	54	55	56	57	58	59	60
DC	2.36	0	2.42	2.38	0	5.0	0	0	0	NC
Pin No.	61	62	63	64	65	66	67	68	69	70
DC	NC	NC	NC	NC	NC	NC	NC	NC	NC	2.38
Pin No.	71	72	73	74	75	76	77	78	79	80
DC	NC	NC	5.00	NC	NC	2.37	NC	0	2.49	2.50

IC 602

Pin No.	1	2	3	4	5	6	7	8	9	10
DC	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.37	4.28
Pin No.	11	12	13	14	15	16	17	18	19	20
DC	0.80	0	2.05	1.96	2.41	2.79	2.65	0	2.50	2.28
Pin No.	21	22	23	24						
DC	4.36	2.50	2.50	5.0						

IC 701

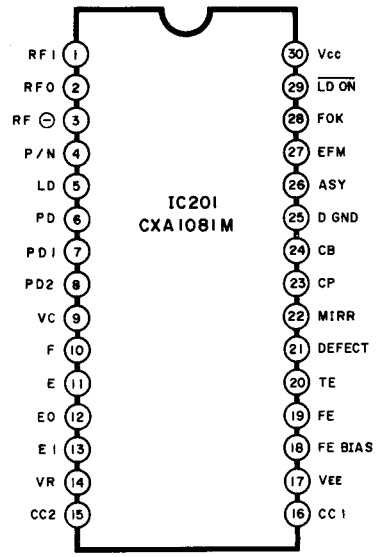
Pin No.	1	2	3	4	5	6	7	8	9	10
DC	2.27	4.55	NC	4.55	0	2.50	2.50	0	2.42	4.54
Pin No.	11	12	13	14	15	16	17	18	19	20
DC	NC	0	0	4.55	0	0	0	NC	NC	2.27

IC 702

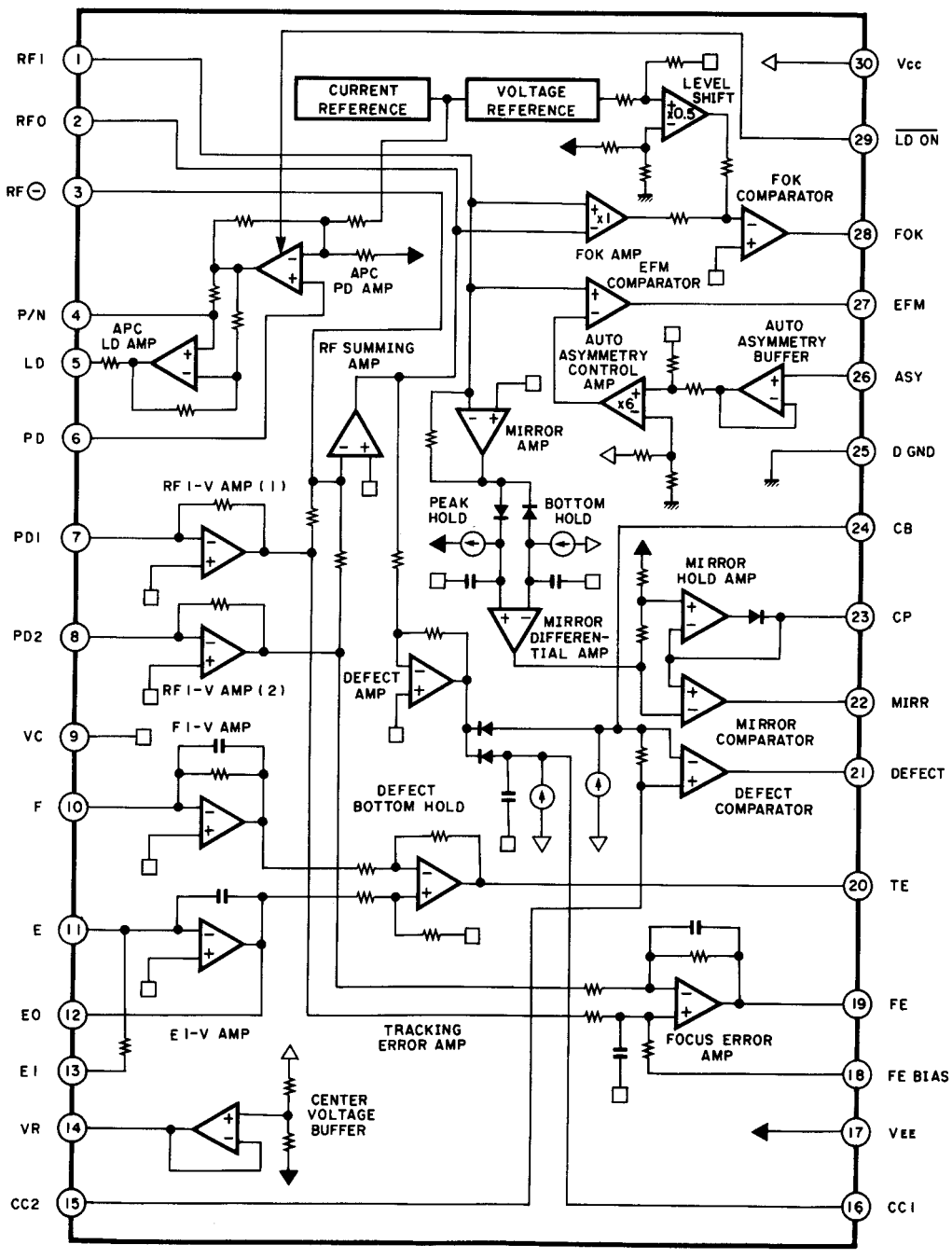
Pin No.	1	2	3	4	5	6	7	8		
DC	0.38	0.24	0.16	−5.01	0.15	0.24	0.37	5.0		

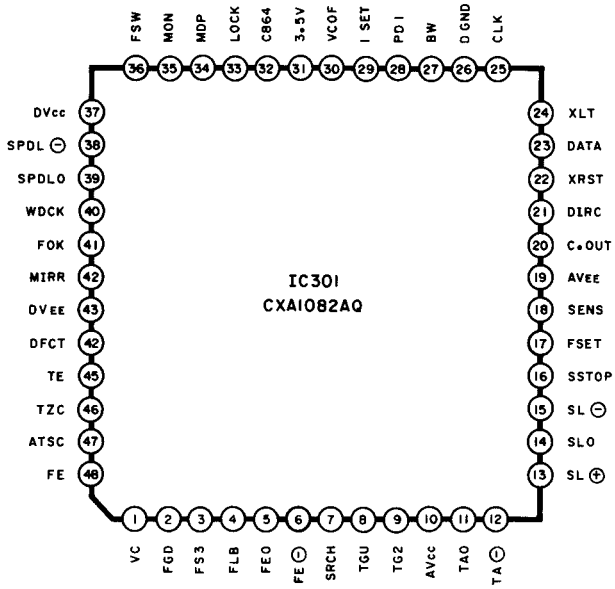
IC 703

Pin No.	1	2	3	4	5	6	7	8		
DC	0	0	0	−5.01	0	0	0	5.0		

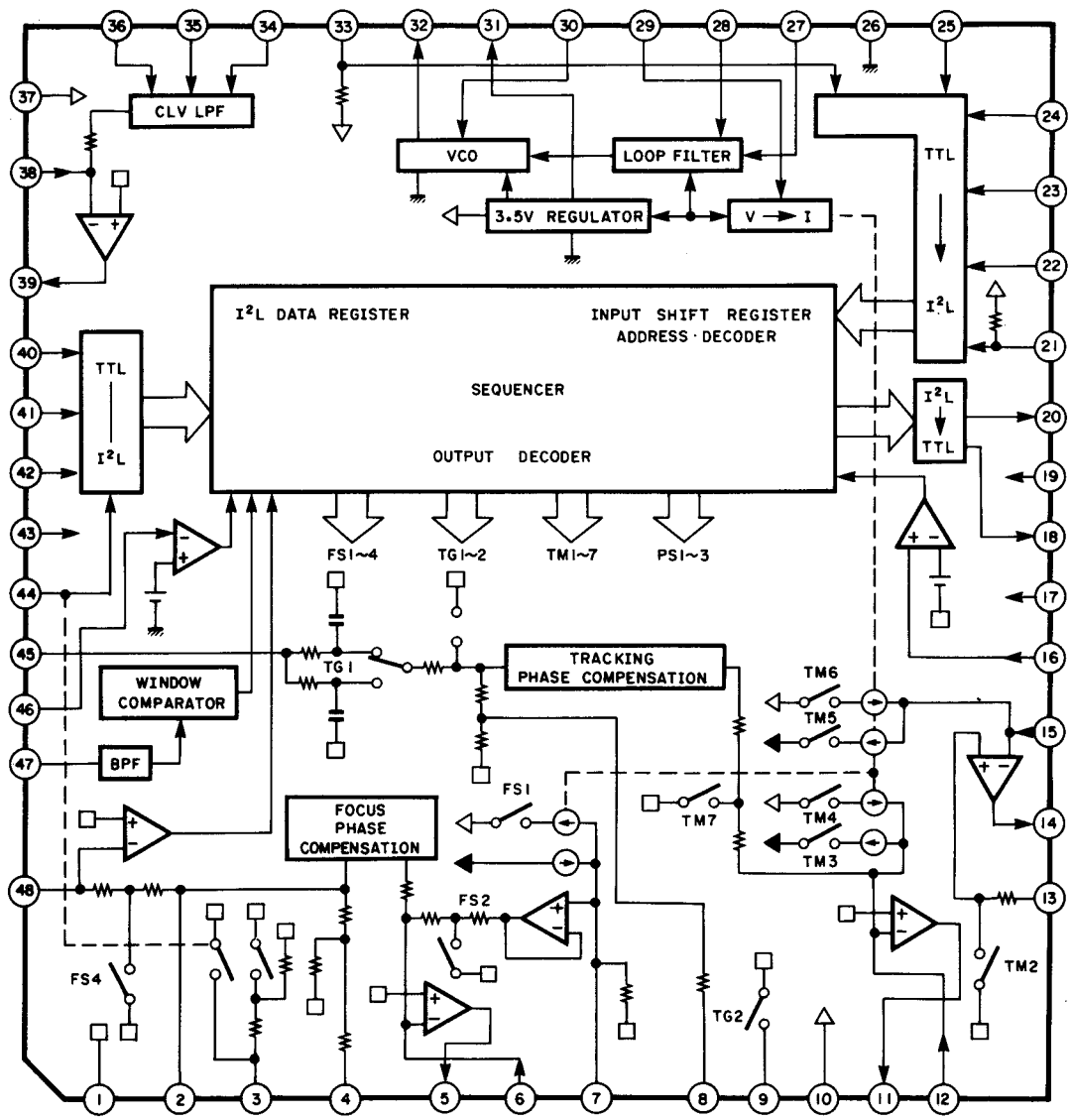


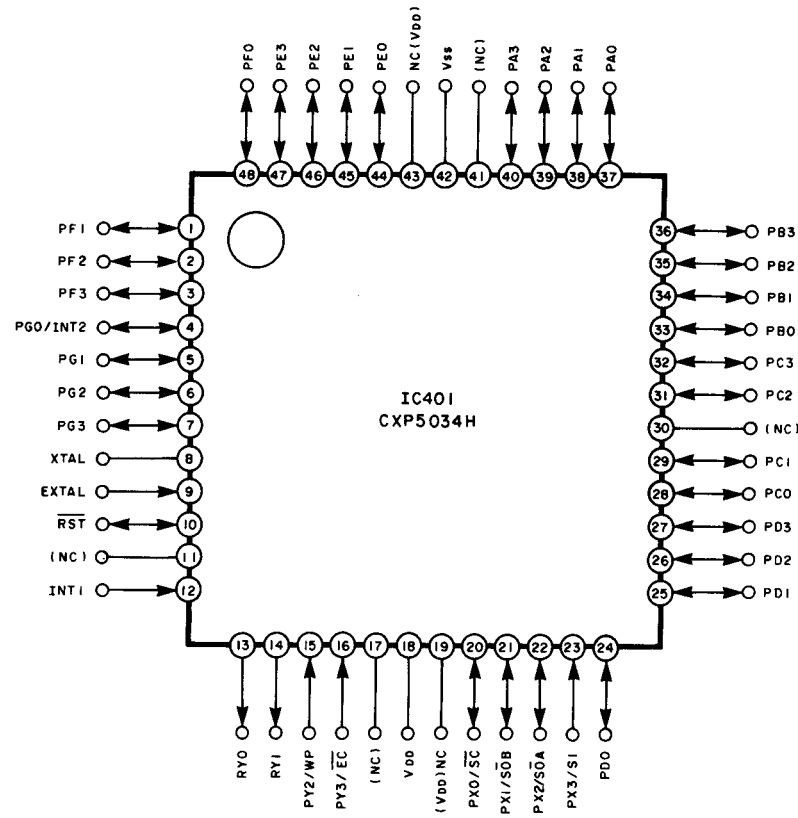
IC201 CXA1081M



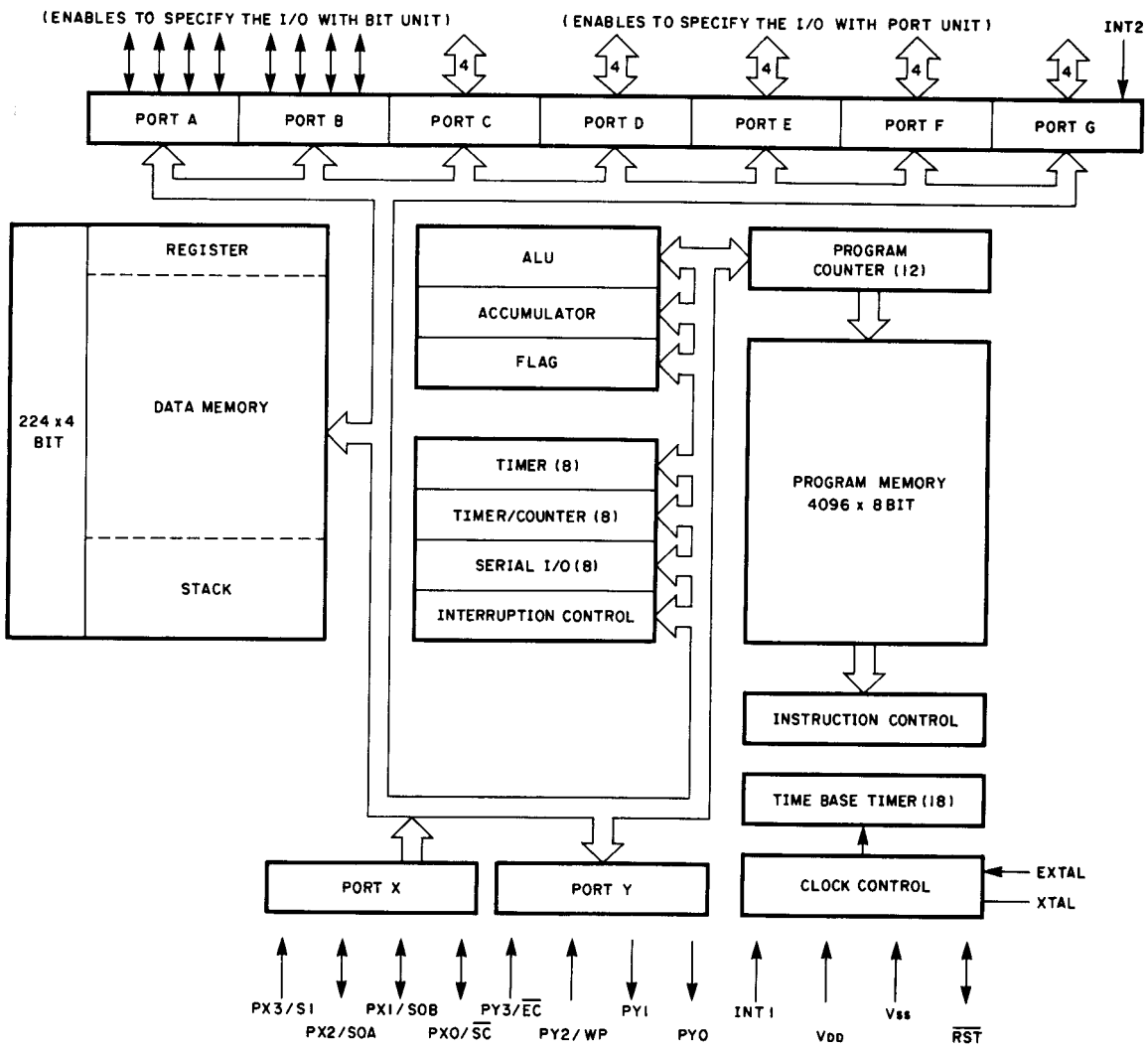


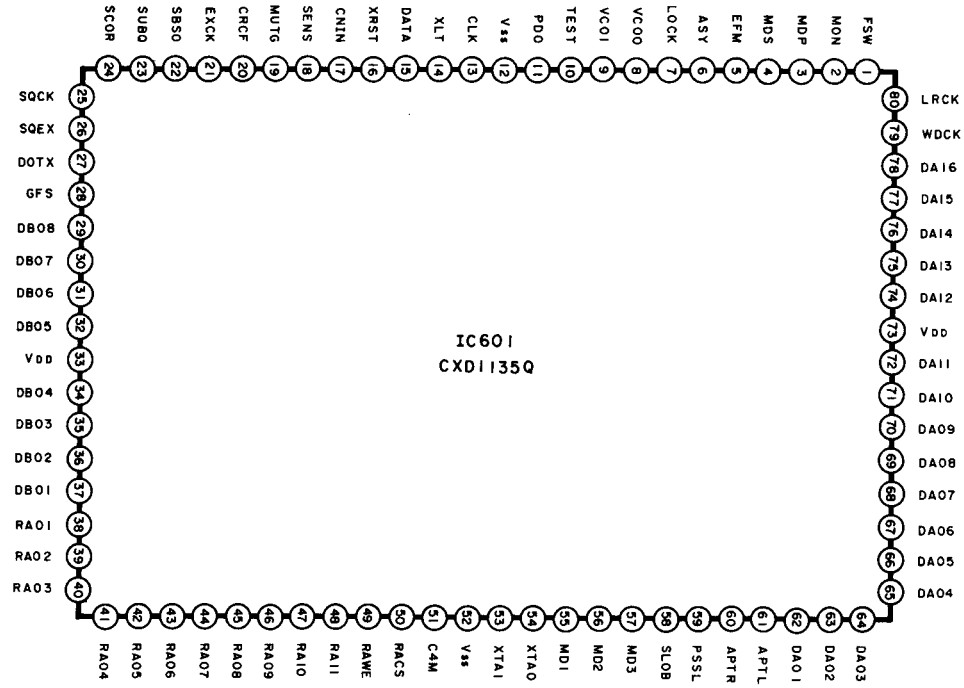
IC301 CXA1082AQ



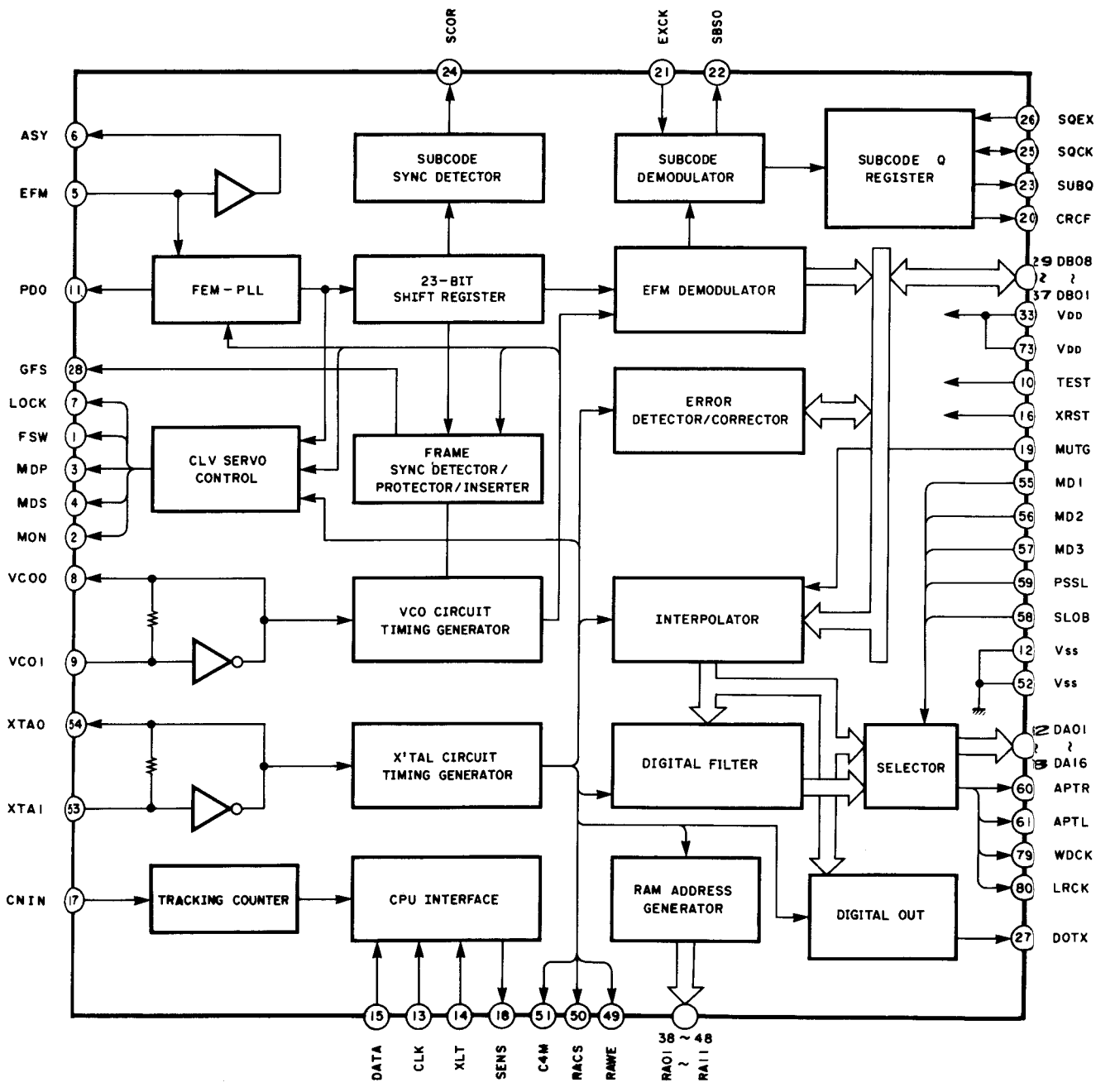


IC401 CXP5034H

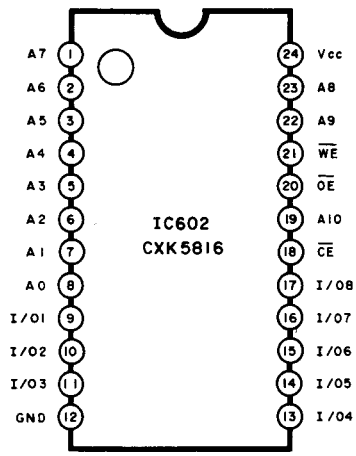


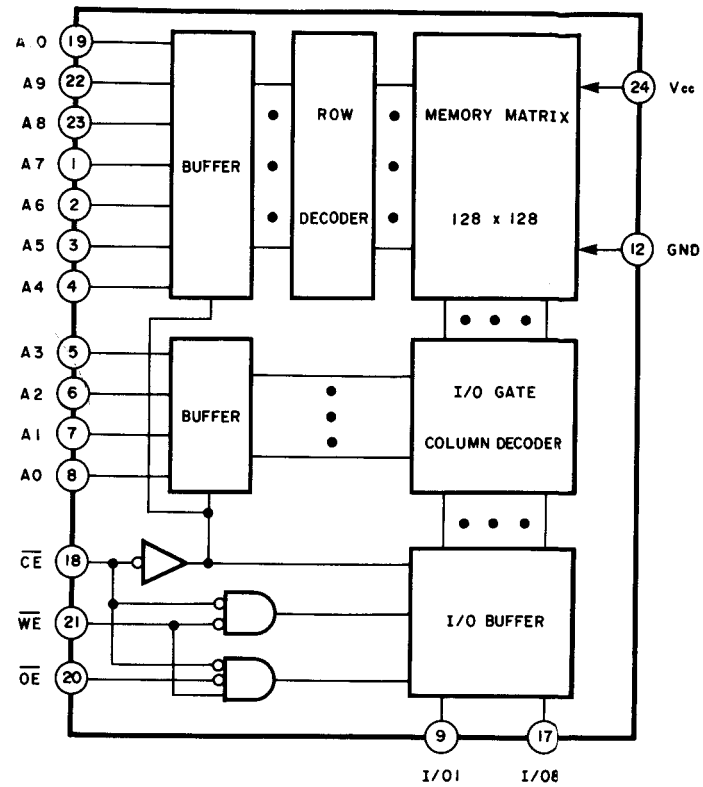


IC601 CXD1135Q

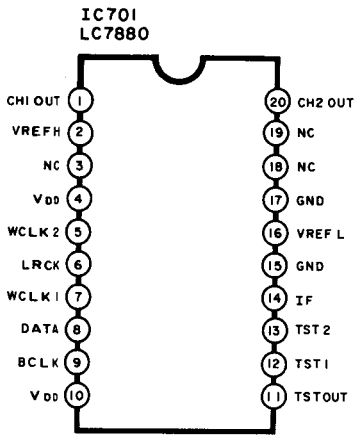


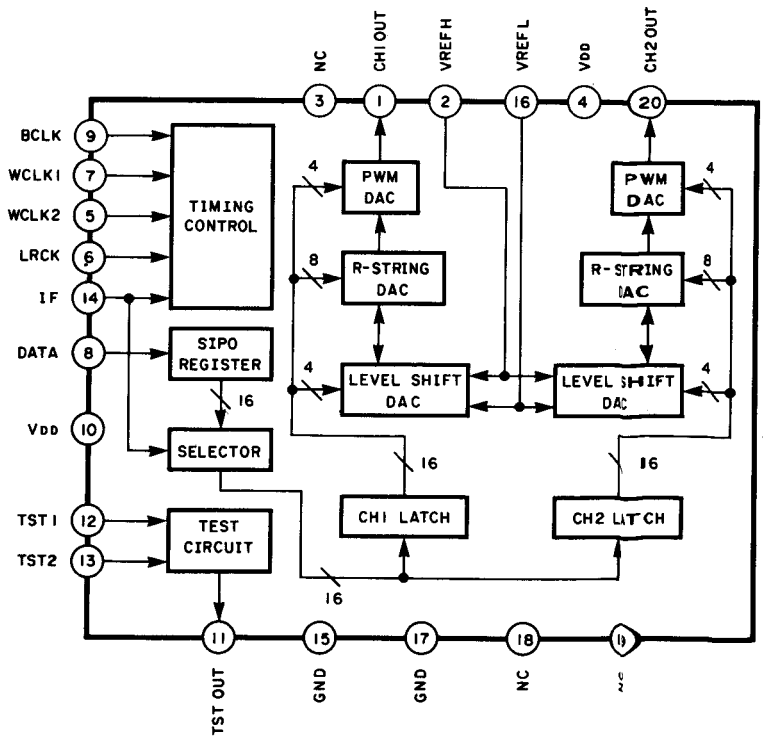
IC602 CXK5816M



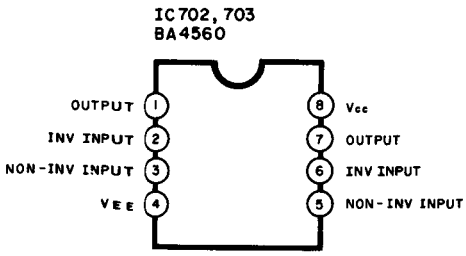


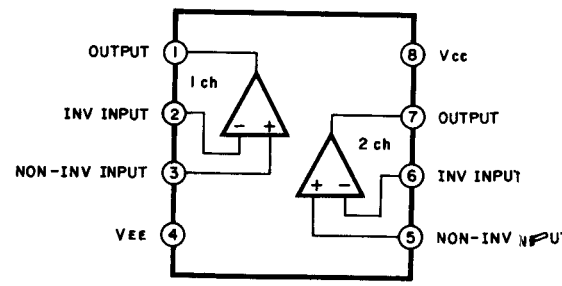
IC701 LC7880





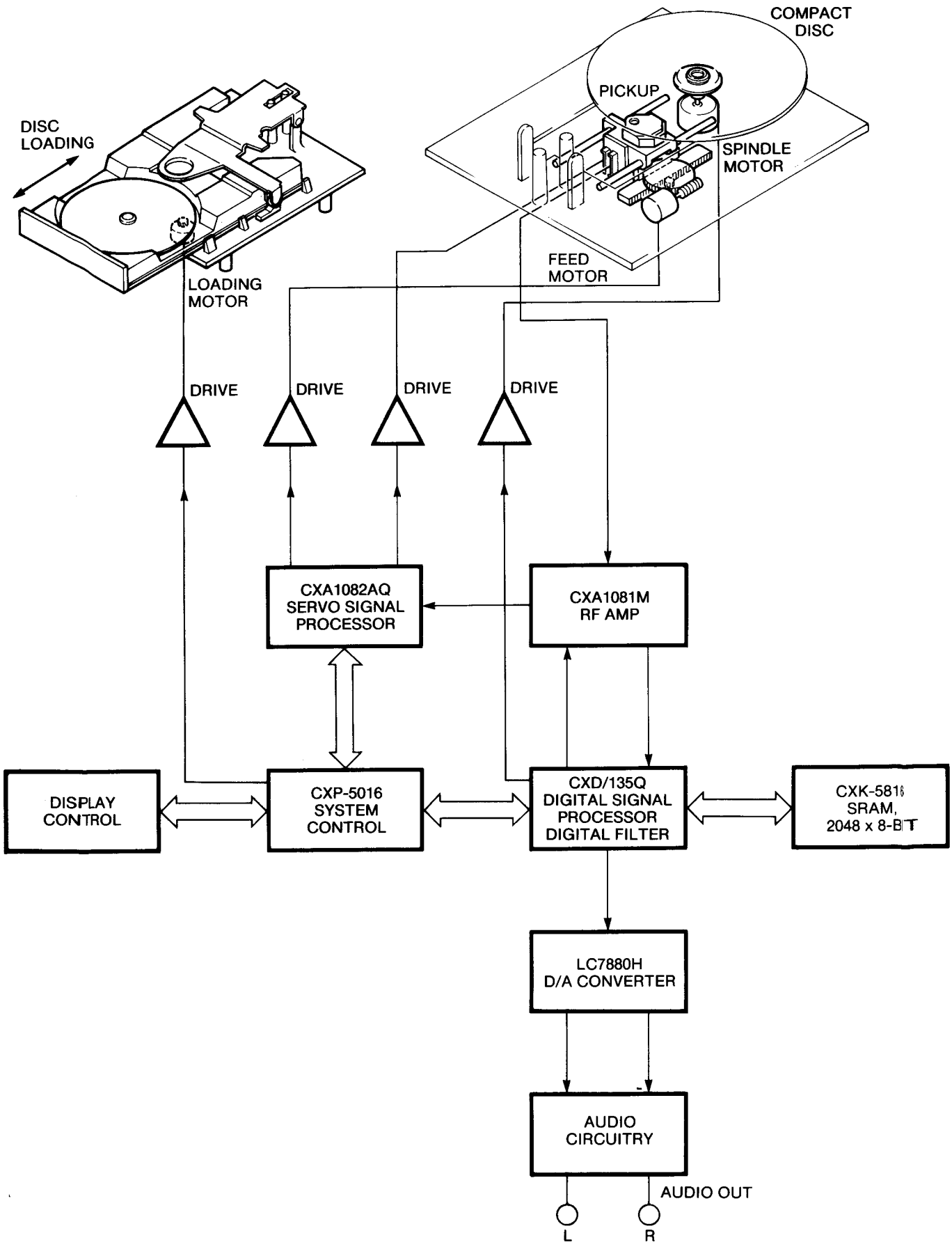
IC702, 703 BA4560





Blockdiagramm CD-Player

Block diagram CD player



Austausch des Laserabtasters

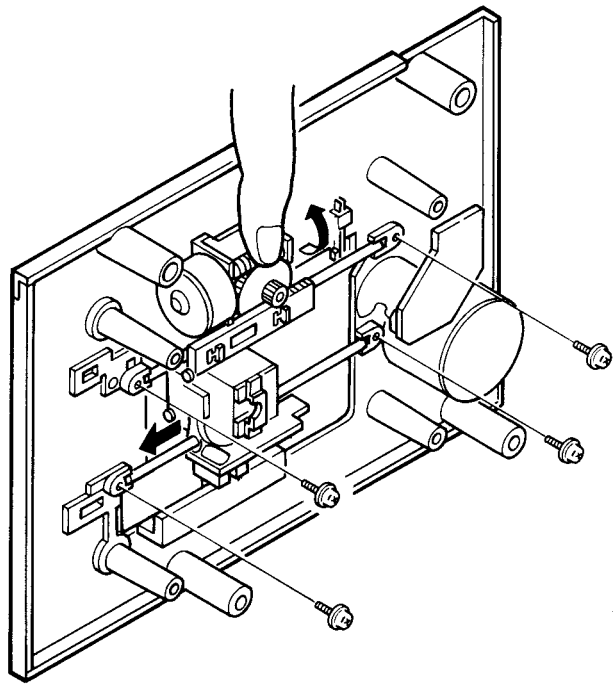
Vor Durchführung dieses Arbeitsganges die Warnhinweise in der Wartungsanleitung (Vorsichtsmaßnahmen gegen elektrostatischen Durchbruch) durchlesen und bei den Arbeiten genau einhalten.

(1) Mechanismus auf Schneckenrad so lange drehen, bis sich der Laserabtaster am linken Anschlag befindet, und dann die vier Befestigungsschrauben der Vorschubwelle lösen.

Pickup replacement procedure

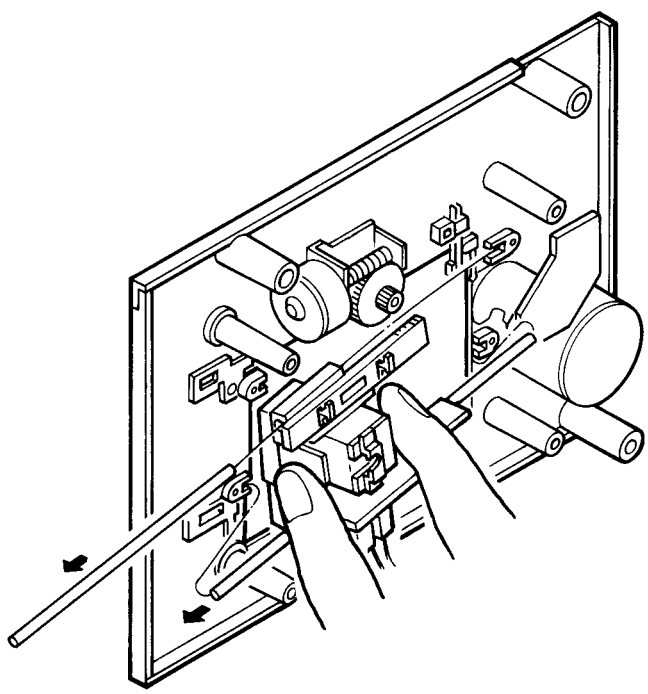
Before performing this operation, read the precautions in the service note (Precautions against electrostatic breakdown) and observe them strictly.

(1) Place the Mechanism Assembly upside down, move the worm gear toward the pickup's outer circumference, and then remove the four screws holding the feed shaft.



(2) Vorschubwelle und Laserabtaster gemeinsam abnehmen, dann die Vorschubwelle vom Tonabnehmer trennen.

(2) Remove the feed shaft and pickup together, then separate the feed shaft from the pickup.

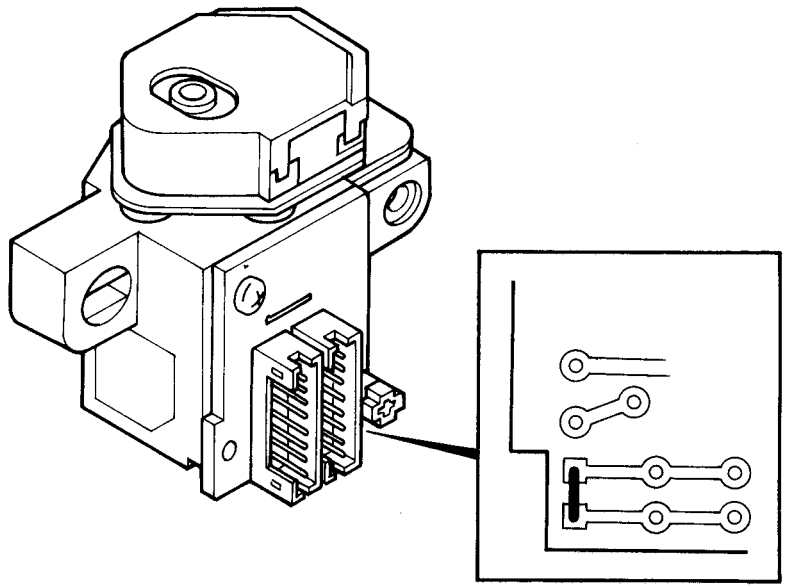


(3) Tonabnehmer wieder einbauen

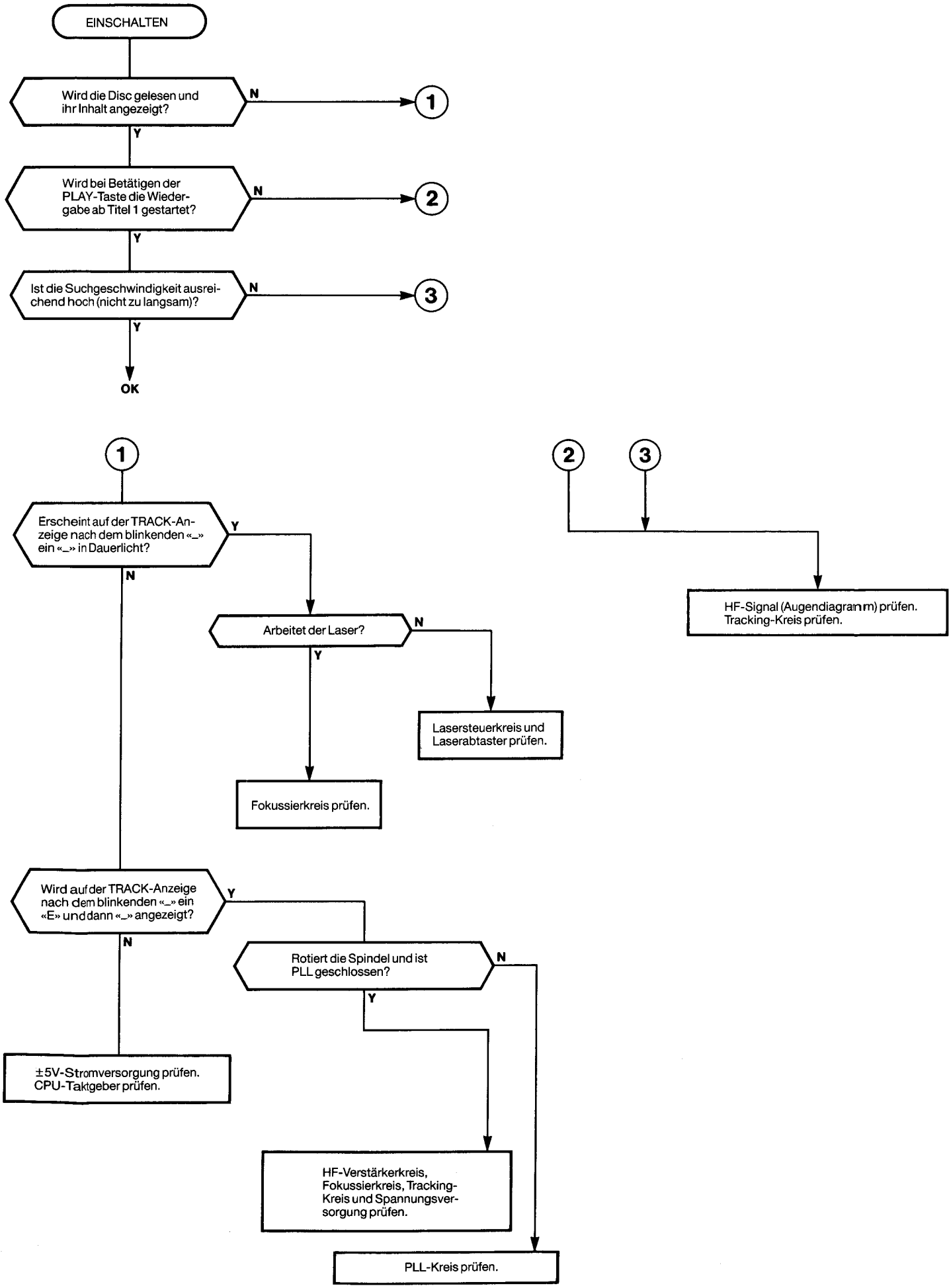
Laserabtaster und Mechanismus sind wartungsfrei. Die Hauptplatine muß jedoch abgeglichen werden (siehe Abgleichanweisung). Beim Anschluß des neuen Laserabtasters an die Hauptplatine (CN201 und CN301) muß die Kurzschlußverbindung an der Tonabnehmerplatine mit einem Lötkolben getrennt werden. Diese Kurzschlußverbindung dient zum Schutz der Laserdiode. Beim Ausbau der Hauptplatine und des kompletten Mechanismus muß hier unbedingt eine Kurzschlußverbindung hergestellt werden.

(3) Replace the pickup.

(The pickup and mechanism are adjustment-free. However, the Main PCB must be adjusted (refer to the description of Electrical Adjustment Procedures). When connecting the new pickup to the Main PCB (CN201 and CN301), open the shorting connection on the pickup's PCB with a soldering iron. The shorting connection is provided to protect the laser diode. Be sure to short-circuit this connection when removing the Main PCB and Mechanism Ass'y.



Fehlersuchdiagramm

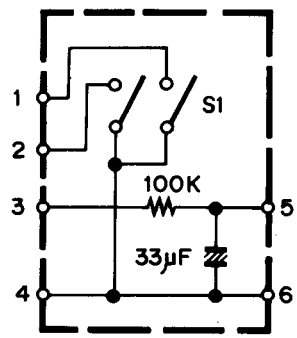


Abgleichanweisung

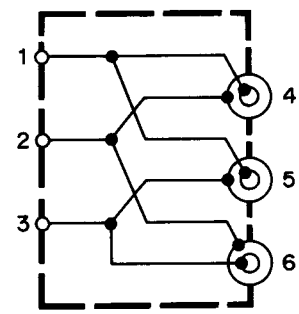
■ Benötigte Meßinstrumente und -Platten

(1) Frequenzzähler × 1
(2) Sonde × 1
(3) Millivolt-/ Ampèremeter × 1
(4) Oszilloskop × 1
(5) Frequenzgang-analysator × 1
(6) Jitter-Meßgerät × 1
(7) Spezial-Test-schaltung (A und B) × 2
(8) Verwendete Platte:
1) EIAJ-Standard-testplatte EIAJ CD-1
2) Philips-Testmuster NR5A
3) A-BEX Model SCD-1432 Testplatte SCD-1432

<Spezial-Testschaltungen>



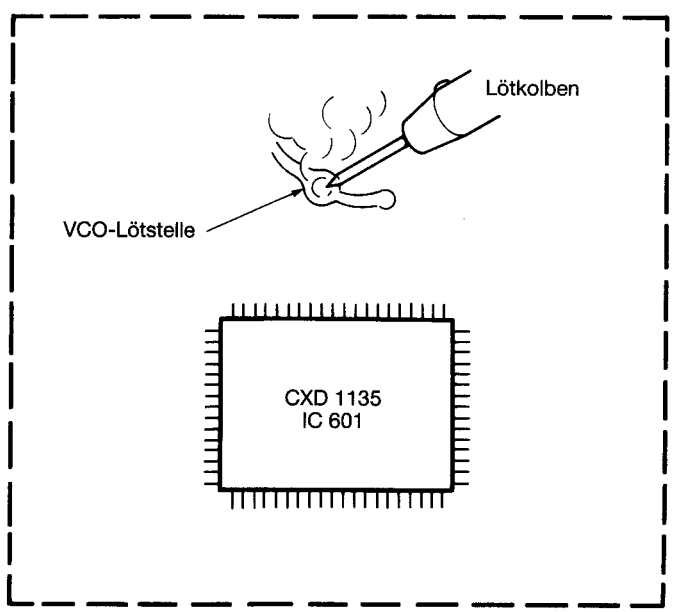
(A)

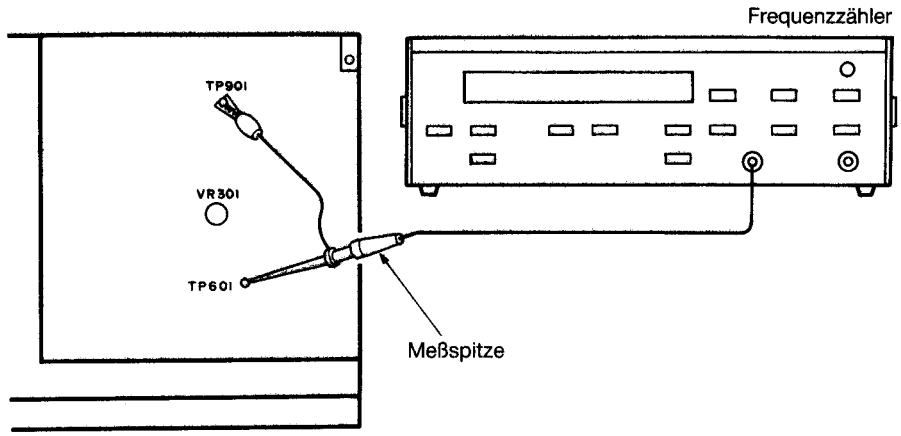


(B)

■ VCO einstellen

(1) Externen Stromanschluß am Anschlußstecker CN901 abziehen und die Befestigungsschrauben der Hauptplatine entfernen.
(2) VCO-Lötstelle auf der Hauptplatine öffnen.
(3) Hauptplatine wieder in ihre ursprüngliche Lage bringen und den Frequenzzähler an TJ601 und TJ901 (GND) anschließen.
(4) Externen Stromanschluß an Anschlußstecker CN901 wieder anschließen und VR601 einstellen, bis am Frequenzzähler ein Anzeigewert von 4,3218 MHz ± 50 kHz (± 100 kHz) erscheint.
(5) Nach dieser Einstellung die Hauptplatine ausbauen und die VCO-Lötstelle wieder schließen.

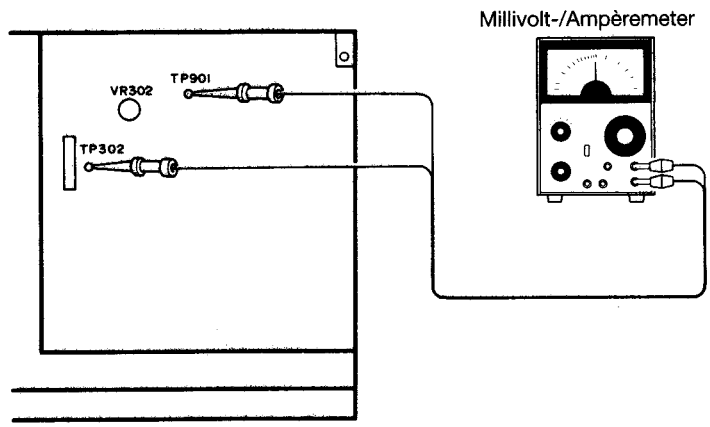




■ Tracking-Offset einstellen

(1) Externe Stromquelle an Anschlußstecker CN901 abziehen, ein Millivolt-/Ampèremeter an TJ302 und TJ901 (GND) anschließen.

(2) Eine externe Stromquelle an Anschlußstecker CN901 anschließen und VR302 einstellen, bis am Millivolt-/Ampèremeter ein Anzeigewert von 0 ±10 mV (±50 mV) erscheint.

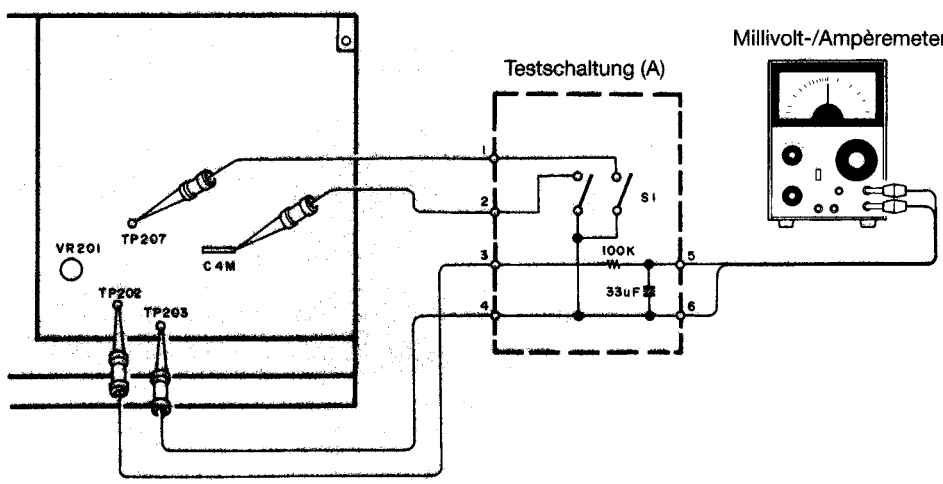


■ EF-Balance einstellen

(1) Externe Stromquelle an Anschlußstecker CN901 abziehen, die Anschlüsse 1 bis 4 der Testschaltung (A) an TJ401, TJ207, TJ202 und TJ901 anschließen und dann das Millivolt-Ampèremeter an Anschluß 5 und 6 anschließen.

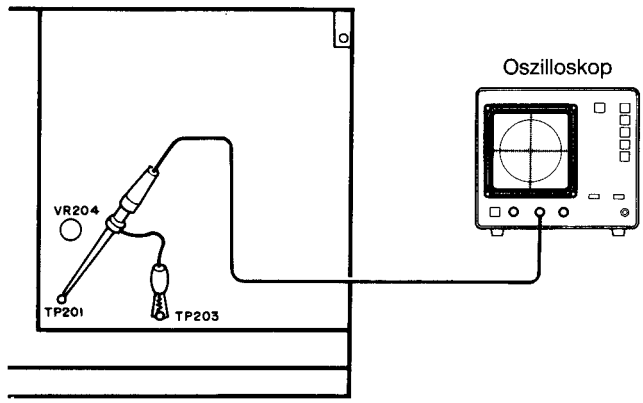
(2) Externe Stromquelle an Anschlußstecker CN901 anschließen, die 180 µm Exzenterplatte (SCD-1432) einlegen und Plattentitel Nr. 6 spielen.

(3) S1 an der Testschaltung auf ON stellen und VR201 einstellen, bis am Millivolt-/Ampèremeter ein Wert von 0 ±20 mV (±50 mV) angezeigt wird.



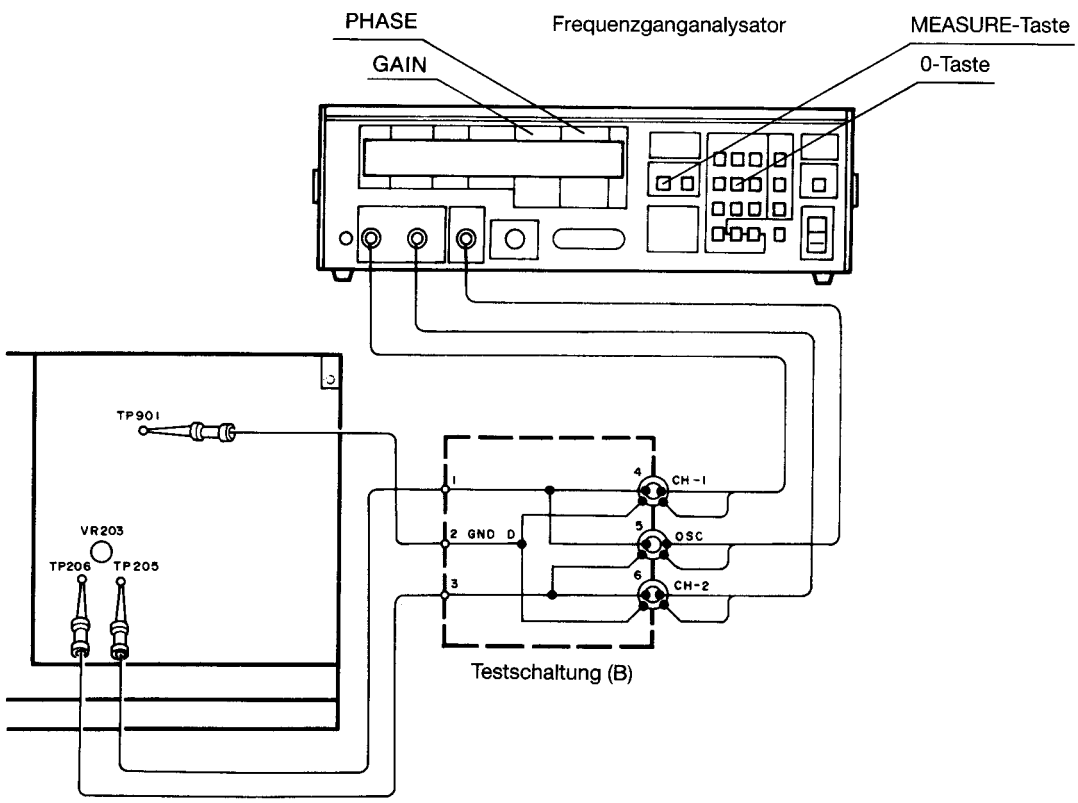
■ Jitter einstellen

(1) Externe Stromquelle an Anschlußstecker CN901 abziehen und ein Oszilloskop an TJ201 und TJ203 anschließen.
(2) Externe Stromquelle an Anschlußstecker CN901 wieder anschließen, EIAJ-Platte (CD-1) einlegen und Plattentitel Nr. 6 spielen.
(3) VR204 so einstellen, daß der Jitter am Jitter-Meßgerät einen möglichst kleinen Anzeigewert erreicht, und dabei prüfen, ob der Anzeigewert am Jitter-Meßgerät 14,5 ns nicht überschreitet.



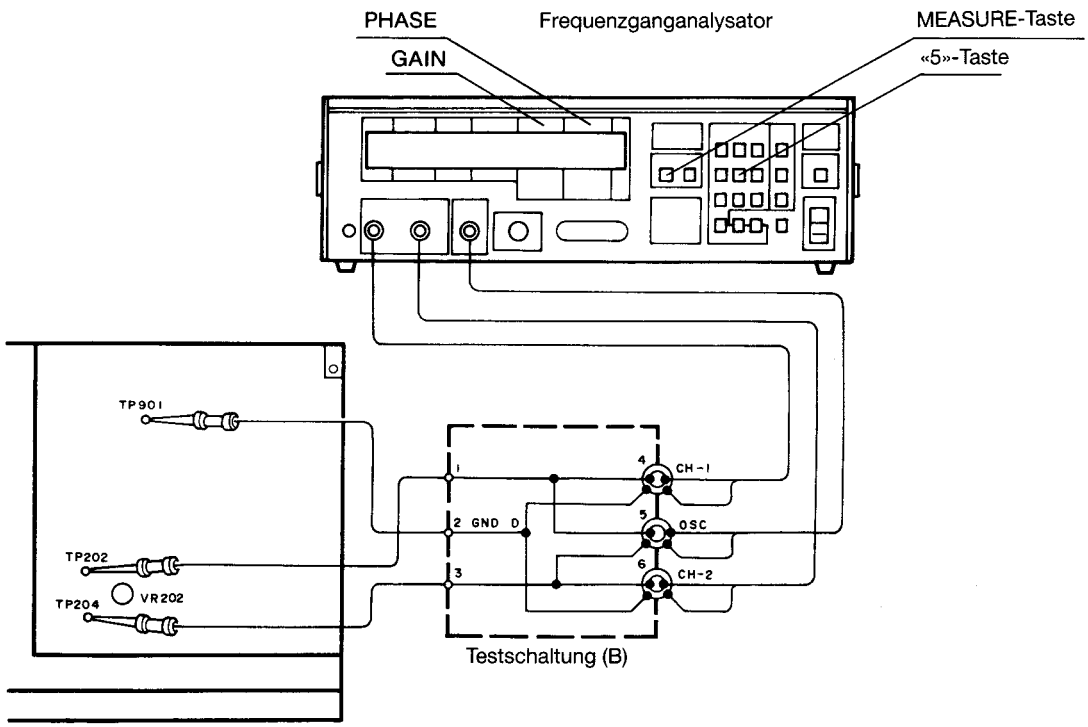
■ Fokussierverstärkung einstellen

(1) Externe Stromquelle an Anschlußstecker CN901 abziehen, die Testschaltung (B) (B) an TJ205, TJ206 und TJ901 der Hauptplatine anschließen und dann einen Frequenzganganalysator an die Schaltung anschließen.
(2) Am Frequenzganganalysator die »SPOT SELECT«-Taste 0 drücken und dann die »MEASURE«-Taste drücken.
(3) Externe Stromquelle an Anschlußstecker CN901 anschließen, EIAJ-Platte (CD-1) einlegen und Plattentitel Nr. 6 abspielen.
(4) VR203 auf eine GAIN-Anzeige von ±1,0 dB (±2,0 dB) am Frequenzganganalysator einstellen; dabei prüfen, ob die PHASE-Anzeige zwischen 35 und 55 liegt.



■ Tracking-Verstärkungsfaktor einstellen

(1) Externe Stromquelle an Anschlußstecker CN901 abziehen, die Testschaltung (B) an TJ202, TJ204 und TJ901 der Hauptplatine anschließen und dann einen Frequenzganganalysator an die Schaltung anschließen.
(2) Am Frequenzganganalysator die »SPOT SELECT«-Taste 5 drücken und dann die »MEASURE«-Taste drücken.
(3) Externe Stromquelle an Anschlußstecker CN901 anschließen, EIAJ-Platte (CD-1) einlegen und Plattentitel Nr. 6 abspielen.
(4) VR202 auf eine GAIN-Anzeige von ±1,0 dB (±2,0 dB) am Frequenzganganalysator einstellen; dabei prüfen, ob die PHASE-Anzeige zwischen 35 und 55 liegt.

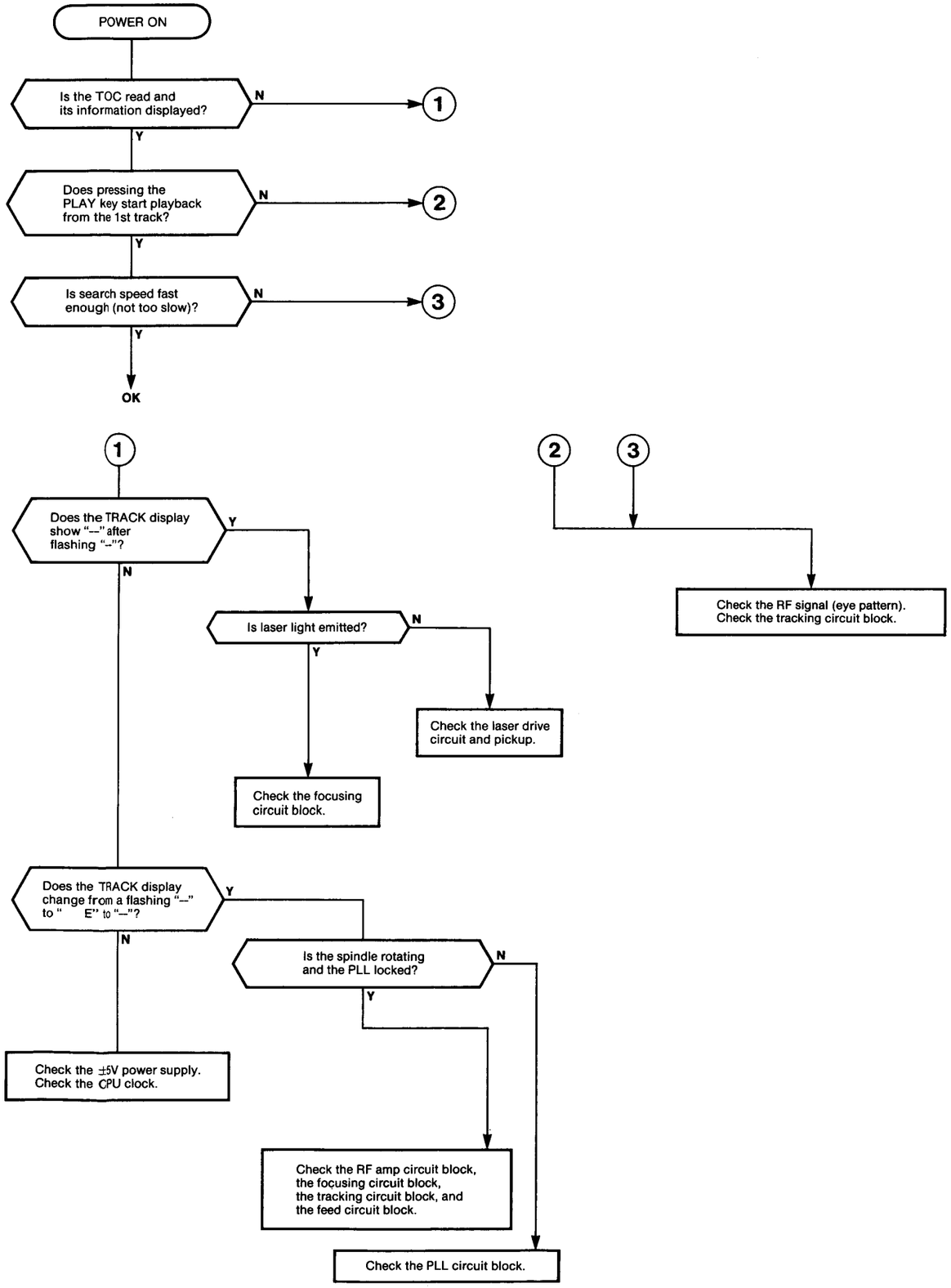


Testschaltung (B)

■ Einstellung des Frequenzganganalysator-Spot

1. Gerätenetzschalter auf »ON« stellen.
2. Fokussierservo einstellen.
   (1) Nach der Kalibrierung die »SPOT SET UP«-Taste drücken.
   Anzeige: SPOT NUMBER =
   (2) »SPOT-SELECT«-Taste 0 drücken, dann die »ENTER«-Taste drücken.
   Anzeige: SPOT NUMBER = 0
   (3) In oben beschriebener Weise die weiteren Modi wie folgt einstellen:
   ① FREQUENCY = 1000 Hz
   ② OSC LEVEL = 100 mV
   ③ INTEG CH-1 = 10 (mal)
   ④ INTEG CH-2 = 10 (mal)
   ⑤ DELAY TIME = 0
   ⑥ MODE = 0
   ⑦ PHASE RANGE = 0
   ⑧ OVER CH-1 = 11 Vrms
   ⑨ OVER CH-2 = 11 Vrms
   ⑩ GAIN LOWER = −1,0
   ⑪ GAIN UPPER = ±1,0
   ⑫ PHASE LOWER = 35
   ⑬ PHASE UPPER = 55
   ⑭ SCAN LIMIT = 0
   ⑮ CALIBRATION = keine Einstellung
   ⑯ ADDRESS = 2
   ⑰ DELIMITR = 0
   ⑱ EDIT = keine Einstellung
3. Tracking-Servo einstellen
   (1) Nach der Einstellung des Fokussierservo die »SPOT SET UP«-Taste drücken und nochmal den »SPOT NUMBER«-Modus eingeben.
   Anzeige: SPOT NUMBER =
   (2) »SPOT-SELECT«-Taste 0 drücken, dann die »ENTER«-Taste drücken.
   Anzeige: SPOT NUMBER = 5
   (3) In oben beschriebener Weise die weiteren Modi wie folgt einstellen:
   ① FREQUENCY = 1200 Hz
   ② OSC LEVEL = 100 mV
   ③ INTEG CH-1 = 10 (mal)
   ④ INTEG CH-2 = 10 (mal)
   ⑤ DELAY TIME = 0
   ⑥ MODE = 0
   ⑦ PHASE RANGE = 0
   ⑧ OVER CH-1 = 11 Vrms
   ⑨ OVER CH-2 = 11 Vrms
   ⑩ GAIN LOWER = −1,0
   ⑪ GAIN UPPER = ±1,0
   ⑫ PHASE LOWER = 35
   ⑬ PHASE UPPER = 55
   ⑭ SCAN LIMIT = 0
   ⑮ CALIBRATION = keine Einstellung
   ⑯ ADDRESS = 2
   ⑰ DELIMITR = 0
   ⑱ EDIT = keine Einstellung

Troubleshooting Flowchart



Alignment Procedure

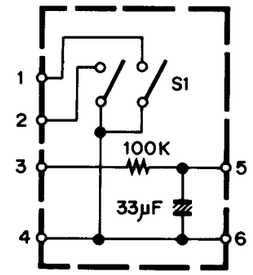
■ Measuring instruments and disc needed

(1)	Frequency counter	x 1	TR5821	Advantest
(2)	Probe	x 1	P6122	Tektronix
(3)	Millivolt ammeter	x 1	115A	Kikusui
(4)	Oscilloscope	x 1	SS-6613	Iwatsu
(5)	Frequency response analyzer	x 1	5010	NF
(6)	Jitter meter	x 1	KJM6135	Kikusui
(7)	Exclusive jig (A and B)	x 2		

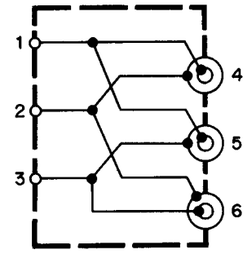
(8) Disc to be used:

1) EIAJ standard test disc	EIAJ CD-1
2) Philips test sample	NR5A
3) A-BEX Model SCD-1432 test disc	SCD-1432

< **Exclusive Jig Circuits** >



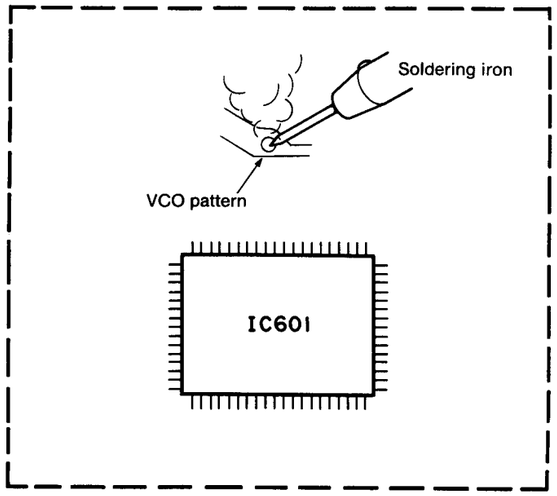
(A)

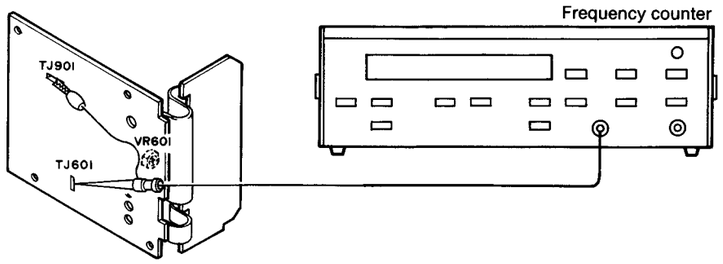


(B)

■ VCO adjustment

(1) Disconnect an external power to connector No. CN901, remove the screws holding the Main PCB.
(2) Open the VCO pattern on the solder side of the Main PCB by removing the solder with a soldering iron.
(3) Place the Main PCB in its original position, and connect the frequency counter to TJ601 and TJ901 (power GND).
(4) Connect an external power to connector No. CN901, and then adjust VR601 for a frequency counter reading of 4.3218 MHz ±50 kHz (±100 kHz).
(5) After this adjustment, remove the Main PCB and shortcircuit the VCO pattern.

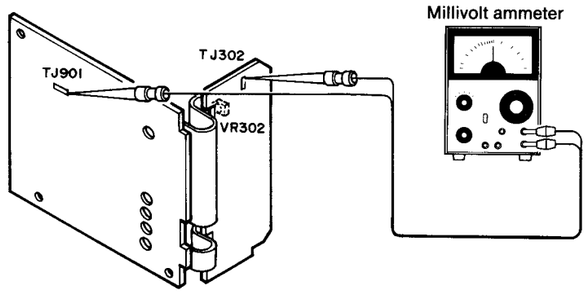




■ Tracking offset adjustment

(1) Disconnect an external power to connector No. CN901, connect a millivolt ammeter to TJ302 and TJ901 (power GND).

(2) Connect an external power to connector No. CN901, and adjust VR301 for a millivolt ammeter reading of 0 ±10 mV (±50 mV).

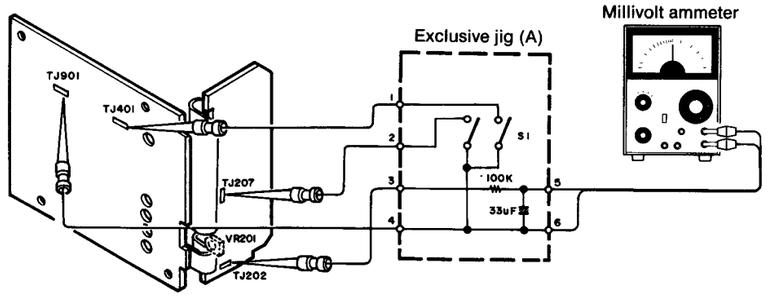


■ EF balance adjustment

(1) Disconnect an external power to connector No. CN901, connect the exclusive jig (A) (pins 1 to 4) to TJ401, TJ207, TJ202, and TJ901, and then connect the millivolt ammeter to pins 5 and 6.

(2) Connect an external power to connector No. CN901, load the 180 μm eccentric disc (SCD-1432) and play disc track No. 6.

(3) Switch S1 of the exclusive jig ON and adjust VR201 for a millivolt ammeter reading of 0 ±20 mV (±50 mV).

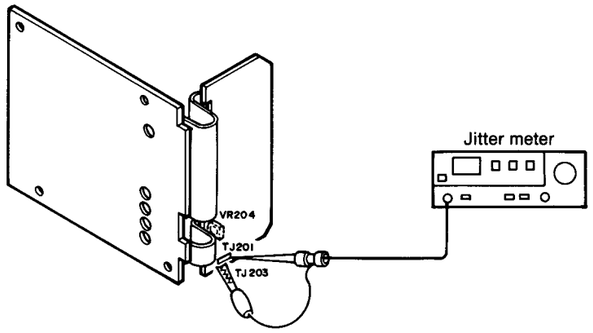


■ Jitter adjustment

(1) Disconnect an external power to connector No. CN901, connect an oscilloscope to TJ201 and TJ203.

(2) Connect an external power to connector No. CN901, load the EIAJ disc (CD-1), and then play desc track No. 6.

(3) Adjust VR204 to minimize the jitter on the jitter meter, and check that the jitter meter reading is no more than 14.5 ns.



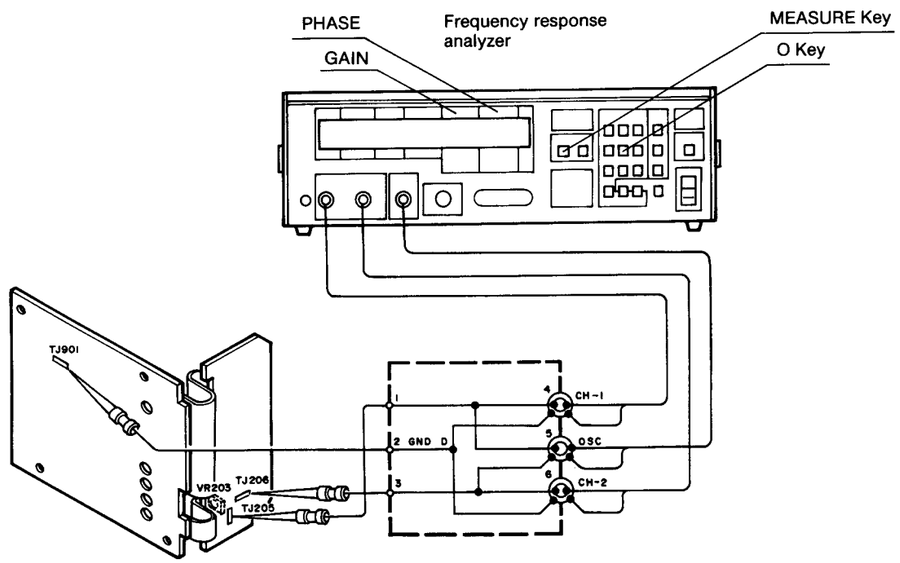
■ Focus gain adjustment

(1) Disconnect an external power to connector No. CN901, connect the exclusive jig (B) to TJ205, TJ206, and TJ901 of the Main PCB, and then connect a frequency response analyzer to the jig.

(2) Press SPOT SELECT key "0" of the frequency response analyzer, and then press the MEASURE key.

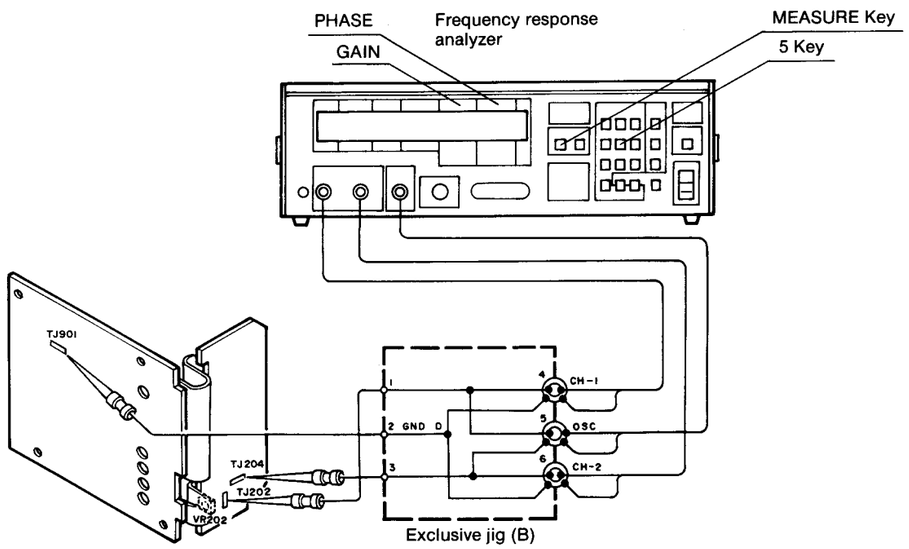
(3) Connect an external power to connector No. CN901, load the EIAJ disc (CD-1), and then play desc track No. 6.

(4) Adjust VR203 for a frequency response analyzer GAIN reading of ±1.0 dB (±2.0 dB), and check that the PHASE reading is between 35 and 55.



■ Tracking gain adjustment

(1) Disconnect an external power to connector No. CN901, connect the exclusive jig (B) to TJ202, TJ204, and TJ901 of the Main PCB, and then connect a frequency response analyzer to the jig.
(2) Press SPOT SELECT key "5" of the frequency response analyzer, and then press the MEASURE key.
(3) Connect an external power to connector No. CN901, load the EIAJ disc (CD-1), and then play disc track No. 6.
(4) Adjust VR202 for a frequency response analyzer GAIN reading of ±1.0 dB (±2.0 dB), and check that the PHASE reading is between 35 and 55.



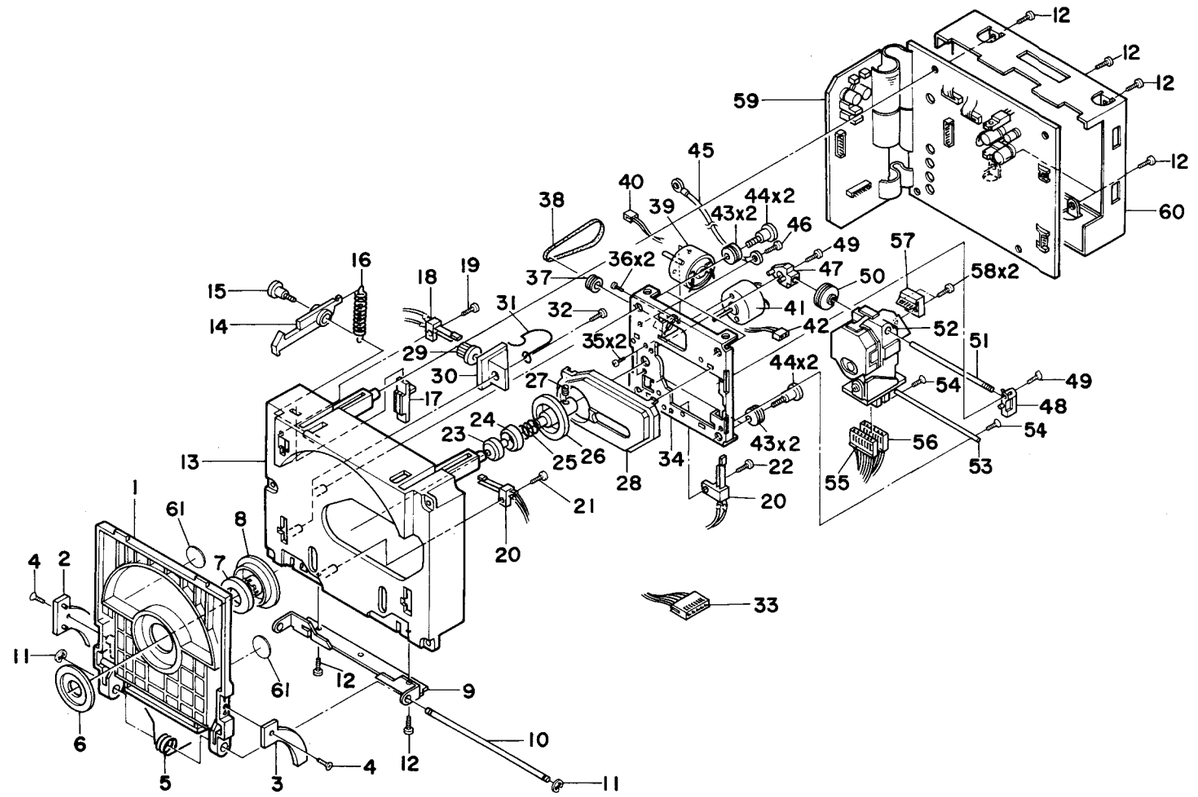
Exclusive jig (B)

■ Setup of the frequency response analyzer spot

1. Turn the set power ON.
2. Set the focusing servo.
   (1) After calibration, press the SPOT SET UP key.
   Display: SPOT NUMBER =
   (2) Press SPOT SELECT key "0", then press the ENTER key.
   Display: SPOT NUMBER = 0
   (3) As in the above, set the following modes.
   ① FREQUCENY = 1000 Hz
   ② OSC LEVEL = 100 mV
   ③ INTEG CH-1 = 10 (times)
   ④ INTEG CH-2 = 10 (times)
   ⑤ DELAY TIME = 0
   ⑥ MODE = 0
   ⑦ PHASE RANGE = 0
   ⑧ OVER CH-1 = 11 Vrms
   ⑨ OVER CH-2 = 11 Vrms
   ⑩ GAIN LOWER = −1.0
   ⑪ GAIN UPPER = ±1.0
   ⑫ PHASE LOWER = 35
   ⑬ PHASE UPPER = 55
   ⑭ SCAN LIMIT = 0
   ⑮ CALIBARATION = No setup
   ⑯ ADDRESS = 2
   ⑰ DELIMITR = 0
   ⑱ EDIT = No setup
3. Set the tracking servo.
   (1) After setting the focusing servo, press the SPOT SET UP key to enter SPOT NUMBER mode again.
   Display: SPOT NUMBER =
   (2) Press SPOT SELECT key "5", then press the ENTER key.
   Display: SPOT NUMBER = 5
   (3) As in the above, set the following modes.
   ① FREQUCENY = 1200 Hz
   ② OSC LEVEL = 100 mV
   ③ INTEG CH-1 = 10 (times)
   ④ INTEG CH-2 = 10 (times)
   ⑤ DELAY TIME = 0
   ⑥ MODE = 0
   ⑦ PHASE RANGE = 0
   ⑧ OVER CH-1 = 11 Vrms
   ⑨ OVER CH-2 = 11 Vrms
   ⑩ GAIN LOWER = −1.0
   ⑪ GAIN UPPER = ±1.0
   ⑫ PHASE LOWER = 35
   ⑬ PHASE UPPER = 55
   ⑭ SCAN LIMIT = 0
   ⑮ CALIBRATION = No setup
   ⑯ ADDRESS = 2
   ⑰ DELIMITR = 0
   ⑱ EDIT = No setup

Explosionsdarstellung CD-Player

Exploded view CD player



Ersatzteilliste CD-Player Mechanik

Spare parts list CD player mechanism

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe
44 099 00	**CD Player kpl. CPMC-KG 001**	**CD player assembly CPMC-KG 001**	A 27	G 2
44 102 00	CD-Plattenfach	Door CD	1	
44 103 00	Zahnbügel	Gear ¼	2	
44 104 00	Feder Plattenfach	Spring door	5	
44 105 00	Zentrierscheibe	Disc cramper	8	
44 106 00	Eject-Hebel	Eject lever	14	
44 107 00	Eject-Knopf	Eject knob	17	
44 108 00	Mikroschalter	Leaf switch	18	
44 109 00	Mikroschalter	Leaf switch	20	
44 110 00	Feder Antriebsteller	Spring table	25	
44 111 00	Antriebsteller	Disc table	26	
44 112 00	Sechskantschraube	Hexagon screw	27	
44 113 00	Dämpferzahnrad	Damper gear	29	
44 114 00	Feder Dämpfer	Spring damper	31	
44 115 00	Motorpulley Laser	Motorpulley laser	37	
44 116 00	Riemen Lasermotor	Belt lasermotor	38	
44 117 00	Motor Laser	Motor laser	39	
44 118 00	Motor Platte	Motor disc	41	
44 119 00	Laser Gewindestange links	Inner bearing left	47	
44 120 00	Laser Gewindestange rechts	Inner bearing right	48	
44 121 00	Pulley Gewindestange	Pulley feed	50	
44 122 00	Gewindestange	Feed rod	51	
44 123 00	Laserabtaster	Laser pick-up	52	
44 124 00	Gleitstange	Guide shaft	53	
44 125 00	Gewindewinkel	Feed angle	57	

Abgleichanweisung: Empfänger/Cassette

Alginment procedure: receiver/tape

1. LW

GENERAL ALIGNMENT CONDITIONS

1. Signal input must be kept as low as possible to avoid overload and clipping.
   (Use highest possible sensitivity of output indicator.)

2. Signal input should be kept as low as possible to avoid A.G.C. action.
   (Set output indicator to highest sensitivity.)

3. Marker insertion and amplitude should not distort the oscillator and amplitude should not distort the oscilloscope trace.

4. Standard modulation is 400 Hz 30%.

INSTRUMENTS REQUIRED

Signal source

* AM signal generator *
* Radio sweep generator *
* Sweep oscilloscope *

Output indicators

* AC millivolt meter *
* Oscilloscope *

STEP	CONNECT SIGNAL SOURCE TO -	CONNECT OUTPUT INDICATOR -	SET SIGNAL OR INSERT MARKER	SET RADIO DIAL TO	ADJUST	ADJUST FOR -
1	Set function selector switch on the front panel to LW position.					
2	Sweep generator connected to a loop or short piece of wire placed near AM antenna	Sweep oscilloscope connected to wire pin of the C 236 or C 237 and volume to maximum	See amplitude of 460 KHz	Quiet point on band near 515 KHz	IF 103	X X O Amplitude of filter
3	Signal generator connected to a loop	AC millivolt meter and oscilloscope connected across speaker	137 KHz	Scale - 0	LW OSC L 104	maximum
4			290 KHz	Scale - 100	OSC Trimmer C 117	
5			170 KHz	170 KHz	LW BAR ANT COIL	
6			270 KHz	270 KHz	RF Trimmer C 115	
7	Repeat step 3 through 6 as necessary to obtain maximum sensitivity on station.					

2. MW

GENERAL ALIGNMENT CONDITIONS

1. Signal input must be kept as low as possible to avoid overload and clipping.
   (Use highest possible sensitivity of output indicator.)

2. Signal input should be kept as low as possible to avoid A.G.C. action.
   (Set output indicator to highest sensitivity.)

3. Marker insertion and amplitude should not distort the oscillator and amplitude should not distort the oscilloscope trace.

4. Standard modulation is 400 Hz

INSTRUMENTS REQUIRED

Signal source

* AM signal generator *
* Radio sweep generator *
* Sweep oscilloscope *

Output indicators

* AC millivolt meter *
* Oscilloscope *

STEP	CONNECT SIGNAL SOURCE TO -	CONNECT OUTPUT INDICATOR -	SET SIGNAL OR INSERT MARKER	SET RADIO DIAL TO	ADJUST	ADJUST FOR -
1	Set function selector switch on the front panel to MW position.					
2	Sweep generator connected to a loop or short piece of wire placed near AM antenna	Sweep oscilloscope connected to wire pin of the C 236 or C 237 and volume to maximum	See amplitude of 460 KHz	Quiet point on band near 515 KHz	IF 103	X X O Amplitude of filter
3	Signal generator connected to a loop	AC millivolt meter and oscilloscope connected across speaker	515 KHz	Scale - 0	AM OSC L 105	maximum
4			1620 KHz	Scale - 100	OSC Trimmer TC - 2	
5			600 KHz	600 KHz	AM BAR ANT COIL	
6			1400 KHz	1400 KHz	RF Trimmer TC - 1	
7	Repeat step 3 through 6 as necessary to obtain maximum sensitivity on station.					

3. FM

GENERAL ALIGNMENT CONDITION

1. Signal input must be kept as low as possible to avoid overload clipping.
   (Use highest possitivity of output indicator.)

2. Markers must be accurate (crystal controlled or calibrated). The 10.7 MHz marker used in each section of the FM alignment must be the same.

3. Signal input should be kept as low as possible to avoid AGC action. (Set output indicator to highest sensitivity.)

4. FM signal generator RF output frequency must be monitoring.

5. Standard modulation is 1 KHz (40 KHz)

INSTRUMENTS REQUIRED

Signal sources

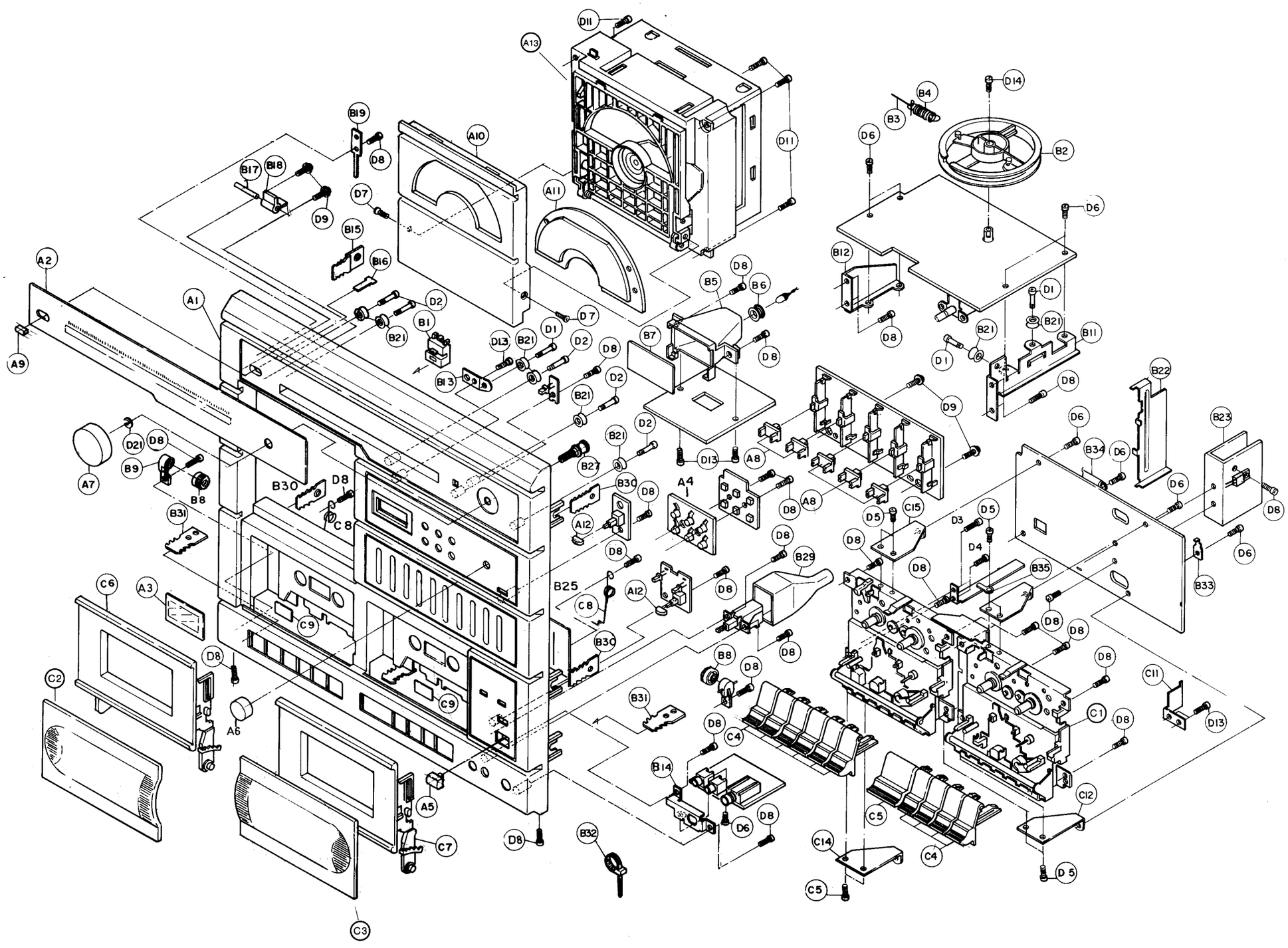
* FM signal generator *
* Radio sweep generator *
* Sweep oscilloscope *
* Frequency counter *

Output indicators

* AC millivolt meter *
* Oscilloscope *
* 114 KHz signal generator *

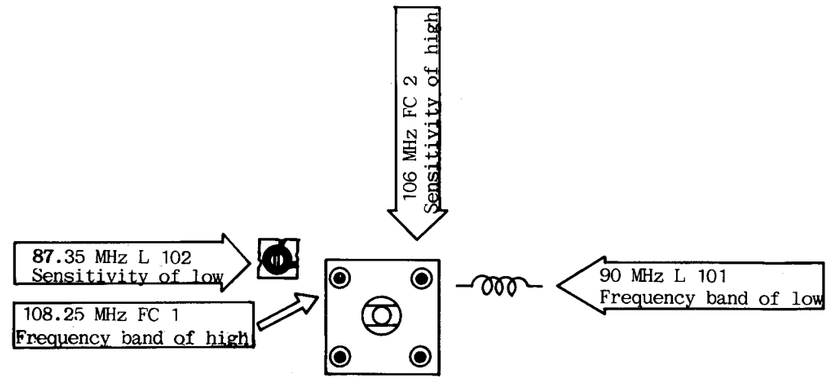
Explosionsdarstellung Gehäuse

Exploded view housing



STEP	CONNECT SIGNAL SOURCE TO -	CONNECT OUTPUT INDICATOR TO -	SET SIGNAL OR INSERT MARKER	SET RADIO DIAL TO	ADJUST	ADJUST FOR
1	Set function selector switch on the front panel to " FM " position.					
2	Radio sweep generator connect to C 106	Oscilloscope connected to wire pin of the C 411 or C 412 and volume VR to maximum	10.7 MHz	Quiet scale pointer on band	IF` 101	Maximum gain with symmet-ical curve peaked at 10.7 MHz marker
3			10.6 10.7 10.8 MHz marker		IF 102	Straightness and symmetry of " S " curve with 10.7 MHz markerd at zero crossover
4	Repeat steps 2 through 3 as necessary to obtain maximum gain and selectivity.					
5	FM signal gene-rotor output soupled to FM aerial. Steps 5,6 frequency must be monitored by frequency counter	AC millivolt meter and osci-lloscope conne-cted across loadspeaker socket	87.35 MHz	Scale - 0	L 102	maximum
6			108.25 MHz	Scale -100	OSC Trimmer FC - 1	
7			90 MHz	90 MHz	L 101	
8			106 MHz	106 MHz	RF Trimmer FC - 2	

STEP	CONNECT SIGNAL SOURCE TO -	CONNECT OUTPUT INDICATOR TO -	SET SIGNAL OR INSERT MARKER	SET RADIO DIAL TO	ADJUST	ADJUST FOR -
9	Repeat steps 5 through 8 as necessary to obtain maximum sensitivity.					



4. MPX

GENERAL ALIGNMENT CONDITION

1. Adjust FM signal generator output to 1mV (60dB) with MPX modulation 1 KHz
   Deviation = 33.75 KHz Pilot = 6 KHz

INSTRUMENTS REQUIRED

Signal source
* FM signal generator *
* Stereo signal generator *

Output indicator
* Frequency counter *
* AC millivolt meter *
* Oscilloscope *

STEP	CONNECT SIGNAL SOURCE TO -	CONNECT OUTPUT INDICATOR TO -	SET SIGNAL	SET RADIO DIAL	ADJUST	ADJUST FOR
1	Set function selector switch on the front panel to " FM STEREO " position.					
2	FM signal generator connected to FM aerial	Frequency count-ER CONNECT TO MPX test point	98 MHz and modulation off, pilot signal off too	98 MHz	R 115	19.00 KHz +/- 50 Hz

5. Tape

INSTRUMENT REQUIRED

1. Audio signal generator.
2. Audio attenuator (600 OHM).
3. Dual trace oscilloscope.
4. Dual trace AC millivolt meter.
5. Frequency counter.

ADJUSTMENT

1. Playback

STEP		MEASURING INSTRUMENT ARRANGEMENT	TEST TAPE	ADJUST POINT	ADJUSTMENT
1	Azimuth and phase	Take out the signal from loadspeaker socket L and R	MTT - 114 (10 KHz-10dB)	R / P head	Adjust to maximum output and synchonize phase
2	Tape NOR speed		MTT - 111 (3 KHz-10dB)	R 238	Adjust to 3 KHz + 3 / -2% at frequency counter display
3	Tape HI speed		MTT - 111 (3 KHz - 10dB)	R 240	Adjust to 4.8 KHz + 3 / -2% at frequency counter display

STEP		MEASURING INSTRUMENT ARRANGEMENT	OUTPUT POINT	OUTPUT POINT	ADJUSTMENT
1	Bias frequency	Frequency counter connect to erase head wire pin	Erase head wire pin	L 203	85 KHz (+ / - 5 KHz)

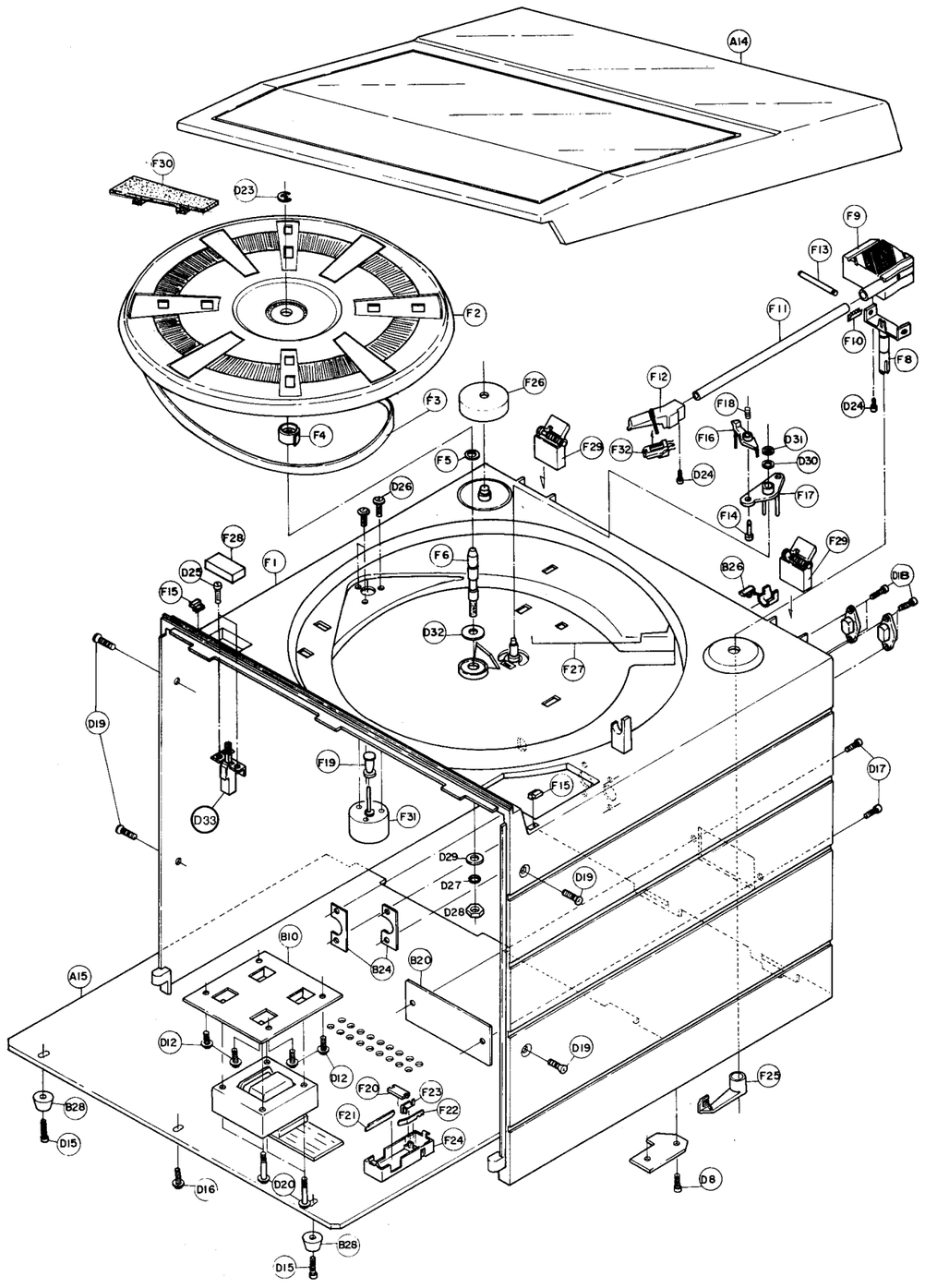
Ersatzteilliste Gehäuseteile

Spare parts list housing parts

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe
44 751 00	Frontblende	Front panel	A 1	C 7
44 752 00	Skalenfenster	Dial window	A 2	A 9
44 753 00	Fenster LCD	LCD window	A 3	A 2
44 754 00	CD-Druckknopfsatz	CD preset button	A 4	A 2
40 788 00	Knopf Netzschalter	Power button	A 5	A 2
40 787 00	Drehknopf Funktion	Funcation knob	A 6	A 3
40 014 00	Drehknopf Tuning	Tuning knob	A 7	A 3
40 000 00	Schiebereglerknopf Equ	Eq-knob	A 8	A 3
44 043 00	Taste »CD-Open«	Button CD open	A 9	A 2
44 755 00	CD-Fachabdeckung	CD-Door	A 10	B 1
44 037 00	Fenster CD-Fach	CD-Window	A 11	A 7
44 045 00	Taste M-S; HSD	Button M-S; HSD	A 12	A 2
44 038 00	Abdeckhaube	Dust cover	A 14	C 6
44 756 00	Bodendeckel	Bottom board	A 15	B 2
40 020 00	Skalenzeiger	Dial pointer	B 1	A 2
29 899 00	Feder Skalenrad	Spring dial	B 4	A 0
40 790 00	Zahnrad Dämpfer	Damper gear	B 8	A 2
40 791 00	Dämpfer	Damper	B 9	A 2
44 757 00	Umlenkwinkel CD-Eject	CD eject rod	B 18	A 1
44 758 00	Blattfeder CD-Eject	CD eject spring	B 19	A 1
34 585 00	Skalenrad	Pulley dial	B 21	A 4
44 759 00	Tuning-Achse	Tuning shaft	B 27	A 9
21 488 00	Gehäusefuß	Gum foot	B 28	A 3
44 760 00	Cass.-Fach Tape A kompl.	Cass.-case A assembly	C 2 + C 6	B 6
44 761 00	Cass.-Fach Tape B kompl.	Cass.-case B assembly	C 3 + C 7	B 6
40 028 00	Taste Cassette schmal	Cass.-key small	C 4	A 3
40 029 00	Taste Cassette breit	Cass.-key large	C 5	A 3
40 795 00	Feder Cassettenfach	Spring cassette case	C 8	A 0
29 937 00	Sicherungsring Tuning-Achse	E-ring tuning shaft	D 21	A 0
44 762 00	Gehäuse	Changer cabinet	F 1	D 7
	Platinen kompl.	**Boards assembly**		
44 768 00	Tuner-Platine kompl.	Tuner P.C.B. assembly		E 5
44 769 00	Cass.-Audio-Platine kompl.	Cass.-Audio P.C.B. assembly		E 1
44 770 00	Equalizer-Platine kompl.	Equalizer P.C.B. assembly		D 3
44 771 00	CD-Display-Platine kompl.	CD-Display P.C.B. assembly		D 8
44 772 00	Netzplatine kompl.	Power P.C.B. assembly		D 2
44 773 00	Buchsenplatine kompl.	Jack P.C.B. assembly		C 7
44 774 00	CD-Bedienteil-Platine kompl.	CD-function switch assembly		C 0
44 775 00	Hi-Speed-Platine kompl.	Hi-speed P.C.B. assembly		C 2
44 776 00	M/S-Schalterplatine kompl.	M/S-switch P.C.B. assembly		B 8
44 777 00	Phono-Platine kompl.	Phono P.C.B. assembly		B 4

Explosionsdarstellung Plattenspieler/Gehäuse

Exploded view phono/housing



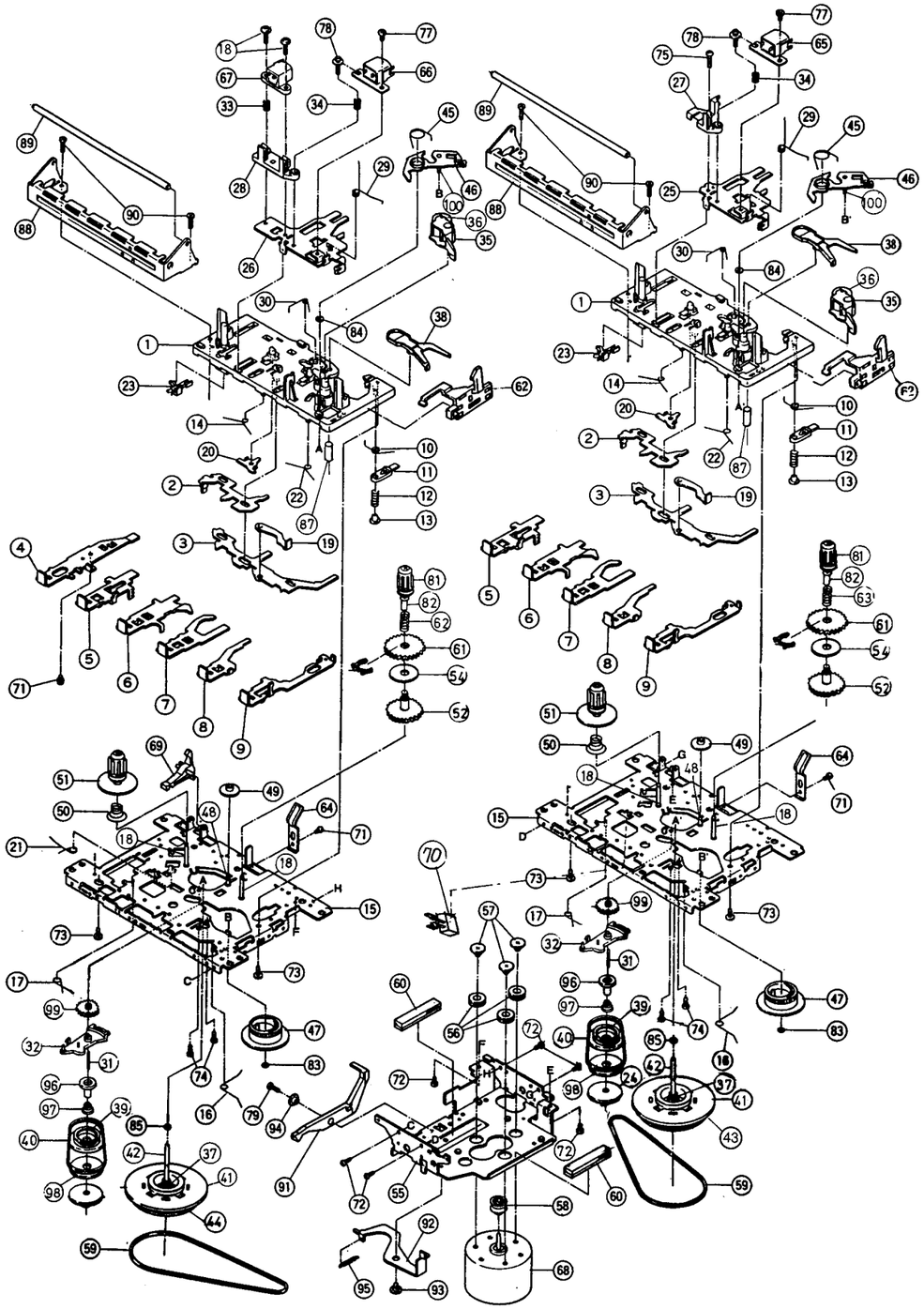
Ersatzteilliste

Spare parts list

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe
40 246 00	IC LA 1186 N		IC 101	B 1
26 797 00	IC LA 1260		IC 102	B 4
21 596 00	IC LA 3361		IC 103	B 1
40 799 00	IC LA 3246		IC 201	B 2
40 037 00	IC LA 3226 T		IC 202	B 2
29 904 00	IC LA 4500		IC 203	C 2
40 771 00	IC LC 7582 B		IC 401	C 5
12 039 00	Diode 10 D 1			A 4
11 241 00	Diode 1 N 4148			A 2
21 351 00	Diode GZA 10 Y		D 203	A 3
32 148 00	Trans 2 SC 930 E		Q 101	A 2
13 545 00	Trans 2 SC 536 F			A 3
44 763 00	Trans 2 SD 400 F-MP		Q 104-5	A 2
13 546 00	Trans 2 SD 734 E		Q 201	A 4
21 312 00	Trans 2 SA 608 E		Q 202	A 4
44 764 00	Trans 2 SD 1913 R		Q 205	A 1
26 520 00	Leuchtdiode rot	LED red	D 801-10	A 5
12 844 00	Leuchtdiode gelb	LED yellow	D 802	A 6
44 081 00	Leuchtdiode rot	LED red	D 101	A 3
34 592 00	Sicherungswiderstand 10 Ohm ½ W	Fuse resistor 10 Ohm ½ W	R 148-242	A 1
32 530 00	Sicherungswiderstand 1 Ohm ½ W	Fuse resistor 1 Ohm ½ W	R 248	A 2
23 047 00	Sicherungswiderstand 10 Ohm ¼ W	Fuse resistor 10 Ohm ¼ W	R 233	A 2
40 806 00	Schieberegler Equ 1 kHz 100 K	Variable resistor equ. 1 kHz	VR 303	A 9
40 805 00	Schieberegler Bal. 100 K	Variable resistor bal. 100 K	VR 304	A 9
40 804 00	Schieberegler Vol. 100 Hz, 10 kHz	Variable resitor vol. 100 Hz, 10 kHz	VR 305-302-301	A 9
13 531 00	FM-Antennenfilter PFWE 4	FM-Filter Antenna PFWE 4	F 101	A 7
22 965 00	FM-Keramik-Filter SFE 10.7	FM Ceramic filter SFE 10.7	F 102	B 1
13 673 00	AM-Filter Keramik	AM Filter ceramic	F 103	B 1
44 765 00	Ferritantenne LM/MW	Bar Ant. LM/MW	L 103	B 2
26 823 00	Spule MW Osz.	MW osc. coil	L 105	A 6
34 588 00	Spule FM Osz.	FM osc. coil	L 102	A 4
34 590 00	Spule 2,2 mH	Coil 2.2 mH	L 106	A 3
34 325 00	Löschoszillatorspule	Tape osc. coil	L 203	A 5
34 326 00	Fangspule	Tape trap coil	L 201-2	A 4
34 330 00	Netzschalter	Power switch	–	B 1
40 803 00	Funktionsschalter	Function rotary switch	S 101 a-h	B 7
34 033 00	A/W-Schalter	R/P switch	S 201 a-d	A 8
29 651 00	Tippschalter	Tact switch	S 501-6	A 3
29 047 00	Tastenschalter	Push switch	S 801-109	B 1
24 377 00	Trimmer 30 pF	Trimmer 30 pF	C 115, 117	A 3
34 591 00	Drehkondensator	PVC	VC 101	B 5
34 264 00	Lampe 12 V 50 mA Display	Lamp 12 V 50 mA display	PL 101	A 6
44 766 00	Display-Anzeige	Display	D 401	D 0
44 767 00	Netztrafo	Power transformer	T 901	C 8
13 986 00	Buchse Kopfhörer	Headphone jack	J 601	B 0
29 007 00	Mikrofonbuchse	Jack mic.	J 603-4	A 5
08 090 00	Buchse Lautsprecher DIN	DIN Jack speaker	J 605-6	A 4

Explosionsdarstellung Cassettenmechanik

Exploded view cassette mechanism



Ersatzteilliste Cassettenrecorder-Mechanik

Spare parts list cassette mechanism

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe
44 782 00-501	**Doppel-Cass.-Deck TN 21 SW 1317**	**Double Cass.-Deck TN 21 SW 1317**	C 1	E 9
44 128 00	Feder Pausenrasthebel	Spring pause lever	10	A 0
44 129 00	Pauserasthebel	Pause lever	11	A 0
44 130 00	Druckfeder Pauserasthebel	Spring pause lever	12	A 0
44 131 00	Sicherungsstöpsel Pause	Pause stopper	13	A 0
32 428 00	Feder Tastenhebel	Spring button lever	14	A 3
32 423 00	Feder Tastenhebel	Spring button lever	22	A 3
44 132 00	Mikroschalter »Main«	Leaf switch main	23	A 4
32 432 00	Feder Löschkopf	Erase head spring	33	A 3
32 435 00	Feder AW-Kopf	Spring R/P head	34	A 3
44 134 00	Bandandruckrolle kompl.	Pinch roller arm assembly	35 + 36	A 6
44 135 00	Tasthebel	Sensing lever	38	A 1
44 138 00	Riemen Rutschkupplung	Belt RF	40	A 4
44 139 00	Schwungmasse kompl. A/W	Flywheel R-P	44 . . .	B 4
40 816 00	Schwungmasse kompl. Play	Flywheel Play	43 . . .	B 4
44 136 00	Kurvenzahnrad	Cam gear	47	A 2
44 140 00	Zahnrad Vorlauf	FF gear	49	A 1
44 319 00	Feder Wickelteller links	Spring back tension	50	A 0
44 141 00	Wickelteller links	Supply reel left	51	A 3
44 142 00	Wickelteller rechts kompl.	Take-up reel assembly	52 . . .	A 4
32 453 00	Gummipuffer Motor	Motor rubber	56	A 2
32 454 00	Schraube Motor	Motor collar screw	57	A 2
44 778 00	Pulley-Motor	Pulley motor	58	A 6
40 818 00	Antriebsriemen	Main belt	59	A 3
44 144 00	Gleithebel Eject	Eject slide lever	62	A 2
32 459 00	Cassettenandruckfeder	Pack spring	64	A 5
34 348 00	Wiedergabekopf	Play head	65	C 6
34 349 00	AW-Kopf	R/P head	66	C 6
24 513 00	Löschkopf	Erase head	67	B 0
44 779 00	Antriebsmotor	Motor	68	C 3
32 451 00	Aufnahmesperrhebel	Record safety lever	69	A 5
44 133 00	Mikroschalter Play	Leaf switch	70	A 7

Ersatzteilliste Plattenspieler

Spare parts list player

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe
40 821 00	Plattenteller	Turn table	F 2 + 4	C 0
24 025 00	Antriebsriemen	Belt	F 3	B 2
40 833 00	Endschalthülse	Pinion	F 4	A 3
40 823 00	Achse Plattenteller	Spindle turntable	F 6	A 6
40 824 00	Tonarm kompl. mit System	Tone arm assembly with cartridge	F 8-13	C 6
44 780 00	Endschalthebel kompl.	Stop plate assembly	F 14-18	B 2
40 829 00	Pulley-Motor	Pulley motor		A 2
40 830 00	Motorschalter kompl.	Switch motor assembly	F 20-24	A 6
40 831 00	Tonarmhebel	Control lever	F 25	A 3
40 832 00	Endschaltstange	Trip lever	F 27	A 1
37 979 00	Taste 33/45	Knob speed	F 28	A 3
37 813 00	Haubenscharnier	Hinger	F 29	B 0
37 963 00	Auflagegumme Plattenteller	Gum cushion	F 30	A 5
34 363 00	Antriebsmotor TMF 9 R 80	Motor	F 31	C 3
32 846 00	System	Cartridge	F 32	B 6
29 937 00	Sicherungsring Plattenteller	E-ring turntable	D 23	A 0
12 828 00	Schalter 33/45	Switch 33/45	D 33	B 0

Bitte bei Ersatzteilbestellung die genaue Bezeichnung und **Ident-Nr. (siehe Typenschild)** des Gerätes sowie Bestell-Nummer und Positions-Nummer des Ersatzteils angeben.

For ordering of spare parts please state exact description and ident.-no. of unit (see silver rating label on the backside of unit) as well as part no. and position no. of required spare parts.

Benutzen Sie:

Telex: 531516

oder

*317298 #

oder

Telefax: 08245/51326